lenovo

Lenovo IdeaPad U510

Hardware Maintenance Manual

Note:

Before using this information and the product it supports, be sure to read the general information under "Notices" on page 84.

First Edition (September 2012)

Contents

About this manual

This manual contains service and reference information for the following Lenovo product:

Lenovo IdeaPad U510

Use this manual to troubleshoot problems.

The manual is divided into the following sections:

- The common sections provide general information, guidelines, and safety information required for servicing computers.
- The product-specific section includes service, reference, and product-specific parts information.

Important:
This manual is intended only for trained servicers who are familiar with Lenovo products. Use this manual to troubleshoot problems effectively.
Before servicing a Lenovo product, make sure to read all the information under “Safety information” on page 1 and “Important service information” on page 16.

Safety information

This chapter presents the following safety information that you need to get familiar with before you service a Lenovo computer:

General safety

Follow these rules below to ensure general safety:

- Observe a good housekeeping in the area where the machines are put during and after the maintenance.
- When lifting any heavy object:
  1. Make sure that you can stand safely without slipping.
  2. Distribute the weight of the object equally between your feet.
  3. Use a slow lifting force. Never move suddenly or twist when you attempt to lift it.
  4. Lift it by standing or pushing up with your leg muscles; this action could avoid the strain from the muscles in your back. Do not attempt to lift any object that weighs more than 16 kg (35 lb) or that you think is too heavy for you.
- Do not perform any action that causes hazards to the customer, or that makes the machine unsafe.
- Before you start the machine, make sure that other service representatives and the customer are not in a hazardous position.
- Please remove covers and other parts in a safe place, away from all personnel, while you are servicing the machine.
- Keep your toolcase away from walk areas so that other people will not trip it over.
- Do not wear loose clothing that can be trapped in the moving parts of the machine. Make sure that your sleeves are fastened or rolled up above your elbows. If your hair is long, fasten it.
- Insert the ends of your necktie or scarf inside clothing or fasten it with the nonconductive clip, about 8 centimeters (3 inches) from the end.
- Do not wear jewelry, chains, metal-frame eyeglasses, or metal fasteners for your clothing.

  Attention: Metal objects are good electrical conductors.
- Wear safety glasses when you are hammering, drilling, soldering, cutting wire, attaching springs, using solvents, or working in any other conditions that may be hazardous to your eyes.
- After service, reinstall all safety shields, guards, labels, and ground wires. Replace any safety device that is worn or defective.
- Reinstall all covers correctly before returning the machine to the customer.
- Fan louvers on the machine help to prevent the overheating of internal components. Do not obstruct fan louvers or cover them with labels or stickers.

Electrical safety

Observe the following rules when working on electrical equipments.

> **Important:**
> Use only approved tools and test equipments. Some hand tools have handles covered with a soft material that does not insulate you when working with live electrical currents.
> Many customers have rubber floor mats near their machines that contain small conductive fibers to decrease electrostatic discharges. Do not use such kind of mat to protect yourself from electrical shock.

- Find the room emergency power-off (EPO) switch, disconnecting switch, or electrical outlet. If an electrical accident occurs, you can then operate the switch or unplug the power cord quickly.
- Do not work alone under hazardous conditions or near the equipment that has hazardous voltages.
- Disconnect all power before:
  - Performing a mechanical inspection
  - Working near power supplies
  - Removing or installing main units
- Before you start to work on the machine, unplug the power cord. If you cannot unplug it, ask the customer to power-off the wall box that supplies power to the machine, and to lock the wall box in the off position.
- If you need to work on a machine that has exposed electrical circuits, observe the following precautions:
  - Ensure that another person, familiar with the power-off controls, is near you.
    Attention: Another person must be there to switch off the power, if necessary.
  - Use only one hand when working with powered-on electrical equipment; keep the other hand in your pocket or behind your back.
    Attention: An electrical shock can occur only when there is a complete circuit. By observing the above rule, you may prevent a current from passing through your body.
  - When using testers, set the controls correctly and use the approved probe leads and accessories for that tester.
  - Stand on suitable rubber mats (obtained locally, if necessary) to insulate you from grounds such as metal floor strips and machine frames.

Observe the special safety precautions when you work with very high voltages; instructions for these precautions are in the safety sections of maintenance information. Be extremely careful when you measure the high voltages.

- Regularly inspect and maintain your electrical hand tools for safe operational condition.
- Do not use worn or broken tools and testers.
- Never assume that power has been disconnected from a circuit. First, check it to make sure that it has been powered off.

- Always look carefully for possible hazards in your work area. Examples of these hazards are moist floors, nongrounded power extension cables, power surges, and missing safety grounds.
- Do not touch live electrical circuits with the reflective surface of a plastic dental mirror. The surface is conductive; such touching can cause personal injury and machine damage.
- Do not service the following parts with the power on when they are removed from their normal operating places in a machine:
  - Power supply units
  - Pumps
  - Blowers and fans
  - Motor generators

  and similar units. (This practice ensures correct grounding of the units.)
- If an electrical accident occurs:
  - Use caution: do not become a victim yourself.
  - Switch off the power.
  - Send the victim to get medical aid.

Safety inspection guide

The purpose of this inspection guide is to assist you in identifying potential unsafe conditions. As each machine was designed and built, required safety items were installed to protect users and service personnel from injury. This guide addresses only those items. You should use good judgment to identify potential safety hazards due to attachment of non-Lenovo features or options not covered by this inspection guide.

If any unsafe conditions are present, you must determine how serious the apparent hazard could be and whether you can continue without first correcting the problem.

Consider these conditions and the safety hazards they present:
- Electrical hazards, especially primary power (primary voltage on the frame can cause serious or fatal electrical shock)
- Explosive hazards, such as a damaged CRT face or a bulging capacitor
- Mechanical hazards, such as loose or missing hardware

To determine whether there are any potential unsafe conditions, use the following checklist at the beginning of every service task. Begin the checks with the power off, and the power cord disconnected.

Checklist:
1. Check exterior covers for damage (loose, broken, or sharp edges).
2. Turn off the computer. Disconnect the power cord.
3. Check the power cord for:
    a. A third-wire ground connector in good condition. Use a meter to measure third-wire ground continuity for 0.1 ohm or less between the external ground pin and the frame ground.
    b. The power cord should be the type specified in the parts list.
    c. Insulation must not be frayed or worn.
4. Check for cracked or bulging batteries.
5. Remove the cover.
6. Check for any obvious non-Lenovo alterations. Use good judgment as to the safety of any non-Lenovo alterations.
7. Check inside the unit for any obvious unsafe conditions, such as metal filings, contamination, water or other liquids, or signs of fire or smoke damage.
8. Check for worn, frayed, or pinched cables.
9. Check that the power-supply cover fasteners (screws or rivets) have not been removed or tampered with.

Handling devices that are sensitive to electrostatic discharge

Any computer part containing transistors or integrated circuits (ICs) should be considered sensitive to electrostatic discharge (ESD). ESD damage can occur when there is a difference in charge between objects. Protect against ESD damage by equalizing the charge so that the machine, the part, the work mat, and the person handling the part are all at the same charge.

Notes:
1. Use product-specific ESD procedures when they exceed the requirements noted here.
2. Make sure that the ESD protective devices you use have been certified (ISO 9000) as fully effective.

When handling ESD-sensitive parts:
- Keep the parts in protective packages until they are inserted into the product.
- Avoid contact with other people.
- Wear a grounded wrist strap against your skin to eliminate static on your body.
- Prevent the part from touching your clothing. Most clothing is insulative and retains a charge even when you are wearing a wrist strap.
- Use the black side of a grounded work mat to provide a static-free work surface. The mat is especially useful when handling ESD-sensitive devices.
- Select a grounding system, such as those listed below, to provide protection that meets the specific service requirement.

Notes:
The use of a grounding system to guard against ESD damage is desirable but not necessary.

 – Attach the ESD ground clip to any frame ground, ground braid, or green-wire ground.
 – When working on a double-insulated or battery-operated system, use an ESD common ground or reference point. You can use coax or connector-outside shells on these systems.
 – Use the round ground prong of the ac plug on ac-operated computers.

Grounding requirements

Electrical grounding of the computer is required for operator safety and correct system function. Proper grounding of the electrical outlet can be verified by a certified electrician.

Safety notices: multilingual translations

The safety notices in this section are provided in English, French, German, Hebrew, Italian, Japanese, and Spanish.

Safety notice 1

Before the computer is powered on after FRU replacement, make sure all screws, springs, and other small parts are in place and are not left loose inside the computer. Verify this by shaking the computer and listening for rattling sounds. Metallic parts or metal flakes can cause electrical shorts.

Avant de remettre l'ordinateur sous tension après remplacement d'une unité en clientèle, vérifiez que tous les ressorts, vis et autres pièces sont bien en place et bien fixées. Pour ce faire, secouez l'unité et assurez-vous qu'aucun bruit suspect ne se produit. Des pièces métalliques ou des copeaux de métal pourraient causer un court-circuit.

Bevor nach einem FRU-Austausch der Computer wieder angeschlossen wird, muß sichergestellt werden, daß keine Schrauben, Federn oder andere Kleinteile fehlen oder im Gehäuse vergessen wurden. Der Computer muß geschüttelt und auf Klappergeräusche geprüft werden. Metallteile oder-splitter können Kurzschlüsse erzeugen.

לפני הפעלת המחשב לאחר החלפת FRU יש לוודא
שכל הברגים, הקפיצים, וחלקים קטנים אחרים נמצאים
במקומם ואינם חופשיים לזוז בתוך המחשב. כדי לוודא
זאת, יש לטלטל את המחשב ולהקשיב לגילוי קולות שקשוק.
חלקי או שבבי מתכת עלולים לגרום לקצרים חשמליים.

Prima di accendere l'elaboratore dopo che é stata effettuata la sostituzione di una FRU, accertarsi che tutte le viti, le molle e tutte le altri parti di piccole dimensioni siano nella corretta posizione e non siano sparse all'interno dell'elaboratore. Verificare ciò scuotendo l'elaboratore e prestando attenzione ad eventuali rumori; eventuali parti o pezzetti metallici possono provocare cortocircuiti pericolosi.

FRU の交換後、コンピュータの電源を入れる前に、ねじ、バネ、その他の小さな部品がすべて正しい位置にあり、またコンピュータの内部で緩んでいないことを確認してください。
これを確認するには、コンピュータを振って、カチャカチャと音がしないか確かめます。金属部品や金属破片はショートの原因になることがあります。

Antes de encender el sistema despues de sustituir una FRU, compruebe que todos los tornillos, muelles y demás piezas pequeñas se encuentran en su sitio y no se encuentran sueltas dentro del sistema. Compruébelo agitando el sistema y escuchando los posibles ruidos que provocarían. Las piezas metálicas pueden causar cortocircuitos eléctricos.

Safety notice 2

⚠ DANGER

Some standby batteries contain a small amount of nickel and cadmium. Do not disassemble a standby battery, recharge it, throw it into fire or water, or short-circuit it. Dispose of the battery as required by local ordinances or regulations. Use only the battery in the appropriate parts listing. Use of an incorrect battery can result in ignition or explosion of the battery.

Certaines batteries de secours contiennent du nickel et du cadmium. Ne les démontez pas, ne les rechargez pas, ne les exposez ni au feu ni à l’eau. Ne les mettez pas en court-circuit. Pour les mettre au rebut, conformez-vous à la réglementation en vigueur. Lorsque vous remplacez la pile de sauvegarde ou celle de l’horloge temps réel, veillez à n’utiliser que les modèles cités dans la liste de pièces détachées adéquate. Une batterie ou une pile inappropriée risque de prendre feu ou d’exploser.

Die Bereitschaftsbatterie, die sich unter dem Diskettenlaufwerk befindet, kann geringe Mengen Nickel und Cadmium enthalten. Sie darf nicht zerlegt, wiederaufgeladen, kurzgeschlossen, oder Feuer oder Wasser ausgesetzt werden. Bei der Entsorgung die örtlichen Bestimmungen für Sondermüll beachten. Beim Ersetzen der Bereitschafts-oder Systembatterie nur Batterien des Typs verwenden, der in der Ersatzteilliste aufgeführt ist. Der Einsatz falscher Batterien kann zu Entzündung oder Explosion führen.

סוללות המתנה מסוימות מכילות כמות קטנה של ניקל וקדמיום. אין לפרק סוללת המתנה, לטעון אותה מחדש, להשליך אותה לאש או למים או לקצר אותה. יש לסלק את הסוללה כנדרש על ידי התקנות והחוקים המקומיים. יש להשתמש רק בסוללה המופיעה ברשימת החלקים המתאימה. שימוש בסוללה לא מתאימה עלול לגרום להצתה או התפוצצות של הסוללה.

Alcune batterie di riserva contengono una piccola quantità di nichel e cadmio. Non smontarle, ricaricarle, gettarle nel fuoco o nell’acqua né cortocircuitarle. Smaltirle secondo la normativa in vigore (DPR 915/82, successive disposizioni e disposizioni locali). Quando si sostituisce la batteria dell’RTC (real time clock) o la batteria di supporto, utilizzare soltanto i tipi inseriti nell’appropriato Catalogo parti. L’impiego di una batteria non adatta potrebbe determinare l’incendio o l’esplosione della batteria stessa.

予備バッテリーの中には少量のニッケルとカドミウムが含まれているものがあります。したがって、予備バッテリーの分解、再充電、火または水の中への投棄、またはショートさせることは決して行わないでください。バッテリーを廃棄する場合は地方自治体の条例に従ってください。適切なパーツ・リストにあるバッテリーだけを使用してください。誤ったバッテリーを使用すると、バッテリーが発火したり、爆発したりすることがあります。

Algunas baterías de reserva contienen una pequeña cantidad de níquel y cadmio. No las desmonte, ni recargue, ni las eche al fuego o al agua ni las cortocircuite. Deséchelas tal como dispone la normativa local. Utilice sólo baterías que se encuentren en la lista de piezas. La utilización de una batería no apropiada puede provocar la ignición o explosión de la misma.

Safety notice 3

⚠ DANGER

The battery pack contains small amounts of nickel. Do not disassemble it, throw it into fire or water, or short-circuit it. Dispose of the battery pack as required by local ordinances or regulations. Use only the battery in the appropriate parts listing when replacing the battery pack. Use of an incorrect battery can result in ignition or explosion of the battery.

La batterie contient du nickel. Ne la démontez pas, ne l'exposez ni au feu ni à l'eau. Ne la mettez pas en court-circuit. Pour la mettre au rebut, conformez-vous à la réglementation en vigueur. Lorsque vous remplacez la batterie, veillez à n'utiliser que les modèles cités dans la liste de pièces détachées adéquate. En effet, une batterie inappropriée risque de prendre feu ou d'exploser.

Akkus enthalten geringe Mengen von Nickel. Sie dürfen nicht zerlegt, wiederaufgeladen, kurzgeschlossen, oder Feuer oder Wasser ausgesetzt werden. Bei der Entsorgung die örtlichen Bestimmungen für Sondermüll beachten. Beim Ersetzen der Batterie nur Batterien des Typs verwenden, der in der Ersatzteilliste aufgeführt ist. Der Einsatz falscher Batterien kann zu Entzündung oder Explosion führen.

מארז הסוללה מכיל כמות קטנה של ניקל וקדמיום. אין לפרק את מארז הסוללה, להשליך אותו לאש או למים או לקצר אותו. יש לסלק את מארז הסוללה הסוללה כנדרש על ידי התקנות והחוקים המקומיים. יש להשתמש רק בסוללה המופיעה ברשימת החלקים המתאימה בזמן החלפת מארז הסוללה. שימוש בסוללה לא מתאימה עלול לגרום להצתה או התפוצצות של הסוללה.

La batteria contiene piccole quantità di nichel. Non smontarla, gettarla nel fuoco o nell'acqua né cortocircuitarla. Smaltirla secondo la normativa in vigore (DPR 915/82, successive disposizioni e disposizioni locali). Quando si sostituisce la batteria, utilizzare soltanto i tipi inseriti nell'appropriato Catalogo parti. L'impiego di una batteria non adatta potrebbe determinare l'incendio o l'esplosione della batteria stessa.

バッテリー・パックには少量のニッケルが含まれています。バッテリー・パックを分解したり、火または水の中に投げ込んだり、ショートさせないでください。バッテリー・パックの廃棄にあたっては、地方自治体の条例または規則に従ってください。バッテリー・パックを交換するときは、適切なパーツ・リストにあるバッテリーだけを使用してください。誤ったバッテリーを使用すると、バッテリーが発火したり、爆発したりすることがあります。

Las baterías contienen pequeñas cantidades de níquel. No las desmonte, ni recargue, ni las eche al fuego o al agua ni las cortocircuite. Deséchelas tal como dispone la normativa local. Utilice sólo baterías que se encuentren en la lista de piezas al sustituir la batería. La utilización de una batería no apropiada puede provocar la ignición o explosión de la misma.

Safety notice 4

⚠ **DANGER**

The lithium battery can cause a fire, an explosion, or a severe burn. Do not recharge it, remove its polarized connector, disassemble it, heat it above 100°C (212°F), incinerate it, or expose its cell contents to water. Dispose of the battery as required by local ordinances or regulations. Use only the battery in the appropriate parts listing. Use of an incorrect battery can result in ignition or explosion of the battery.

La pile de sauvegarde contient du lithium. Elle présente des risques d'incendie, d'explosion ou de brûlures graves. Ne la rechargez pas, ne retirez pas son connecteur polarisé et ne la démontez pas. Ne l'exposez pas à une temperature supérieure à 100°C, ne la faites pas brûler et n'en exposez pas le contenu à l'eau. Mettez la pile au rebut conformément à la réglementation en vigueur. Une pile inappropriée risque de prendre feu ou d'exploser.

Die Systembatterie ist eine Lithiumbatterie. Sie kann sich entzünden, explodieren oder schwere Verbrennungen hervorrufen. Batterien dieses Typs dürfen nicht aufgeladen, zerlegt, über 100 C erhitzt oder verbrannt werden. Auch darf ihr Inhalt nicht mit Wasser in Verbindung gebracht oder der zur richtigen Polung angebrachte Verbindungsstecker entfernt werden. Bei der Entsorgung die örtlichen Bestimmungen für Sondermüll beachten. Beim Ersetzen der Batterie nur Batterien des Typs verwenden, der in der Ersatzteilliste aufgeführt ist. Der Einsatz falscher Batterien kann zu Entzündung oder Explosion führen.

סוללת הליתיום עלולה לגרום לשריפה, להתפוצצות או
לכוויות קשות. אין לטעון אותה מחדש, לסלק את המחבר
המקוטב שלה, לפרק אותה או לחמם אותה לטמפרטורה
העולה על 100 מעלות צלזיוס. אין לשרוף את הסוללה ואין
לחשוף את תוכן התא למים. יש לסלק את הסוללה כנדרש
בתקנות ובחוקים המקומיים. יש להשתמש רק בסוללה
המופיעה ברשימת החלקים המתאימים. שימוש בסוללה
אחרת עלול לגרום לסכנת שריפה או התפוצצות.

La batteria di supporto e una batteria al litio e puo incendiarsi, esplodere o procurare gravi ustioni. Evitare di ricaricarla, smontarne il connettore polarizzato, smontarla, riscaldarla ad una temperatura superiore ai 100 gradi centigradi, incendiarla o gettarla in acqua. Smaltirla secondo la normativa in vigore (DPR 915/82, successive disposizioni e disposizioni locali). L'impiego di una batteria non adatta potrebbe determinare l'incendio o l'esplosione della batteria stessa.

リチウム・バッテリーは、火災、爆発、または重症のやけどを引き起こすことがあります。バックアップ・バッテリーの充電、その極性コネクターの取り外し、バッテリー本体の分解、
100 ℃ (212 ˚F) 以上への加熱、焼却、電池の中身を水に浸すことはしないでください。バッテリーを廃棄する場合は地方自治体の条例に従ってください。適切なパーツ・リストにあるバッテリーだけを使用してください。誤ったバッテリーを使用すると、バッテリーが発火したり、爆発したりすることがあります。

La batería de repuesto es una batería de litio y puede provocar incendios, explosiones o quemaduras graves. No la recargue, ni quite el conector polarizado, ni la desmonte, ni caliente por encima de los 100°C (212°F), ni la incinere ni exponga el contenido de sus celdas al agua. Deséchela tal como dispone la normativa local.

Safety notice 5

If the LCD breaks and the fluid from inside the LCD gets into your eyes or on your hands, immediately wash the affected areas with water at least for 15 minutes. Seek medical care if any symptoms caused by the fluid are present after washing.

Si le panneau d’affichage à cristaux liquides se brise et que vous recevez dans les yeux ou sur les mains une partie du fluide, rincez-les abondamment pendant au moins quinze minutes. Consultez un médecin si des symptômes persistent après le lavage.

Die Leuchtstoffröhre im LCD-Bildschirm enthält Quecksilber. Bei der Entsorgung die örtlichen Bestimmungen für Sondermüll beachten. Der LCD-Bildschirm besteht aus Glas und kann zerbrechen, wenn er unsachgemäß behandelt wird oder der Computer auf den Boden fällt. Wenn der Bildschirm beschädigt ist und die darin befindliche Flüssigkeit in Kontakt mit Haut und Augen gerät, sollten die betroffenen Stellen mindestens 15 Minuten mit Wasser abgespült und bei Beschwerden anschließend ein Arzt aufgesucht werden.

אם מסך הגביש הנוזלי (LCD) נשבר והנוזל מתוך המסך בא במגע עם עיניכם או ידיכם, שטפו את האזורים הנגועים מיד במים במשך 15 דקות לפחות. פנו לקבלת עזרה רפואית אם תסמינים הנובעים מהמגע עם הנוזל נמשכים לאחר השטיפה.

Nel caso che caso l’LCD si dovesse rompere ed il liquido in esso contenuto entrasse in contatto con gli occhi o le mani, lavare immediatamente le parti interessate con acqua corrente per almeno 15 minuti; poi consultare un medico se i sintomi dovessero permanere.

LCD が破損し、 LCD の中の液体が目に入ったり、手に触れたりした場合は、液体が触れた部分を少なくとも 15 分間洗い流してください。洗い流した後に、液体によって何らかの症状が現れた場合は、医師の治療を受けてください。

Si la LCD se rompe y el fluido de su interior entra en contacto con sus ojos o sus manos, lave inmediatamente las áreas afectadas con agua durante 15 minutos como mínimo. Obtenga atención medica si se presenta algún síntoma del fluido despues de lavarse.

Safety notice 6

⚠ DANGER

To avoid shock, do not remove the plastic cover that protects the lower part of the inverter card.

Afin d’éviter tout risque de choc électrique, ne retirez pas le cache en plastique protégeant la partie inférieure de la carte d’alimentation.

Aus Sicherheitsgründen die Kunststoffabdeckung, die den unteren Teil der Spannungswandlerplatine umgibt, nicht entfernen.

כדי למנוע התחשמלות, אין להסיר את מכסה הפלסטיק
המגן על חלקו התחתון של הכרטיס ההפוך.

Per evitare scosse elettriche, non rimuovere la copertura in plastica che avvolge la parte inferiore della scheda invertitore.

感電を防ぐため、インバーター・カードの下部を保護しているプラスチック・カバーを外さないでください。

Para evitar descargas, no quite la cubierta de plástico que rodea la parte baja de la tarjeta invertida.

Safety notice 7

⚠ DANGER

Though the main batteries have low voltage, a shorted or grounded battery can produce enough current to burn personnel or combustible materials.

Bien que le voltage des batteries principales soit peu élevé, le court-circuit ou la mise à la masse d’une batterie peut produire suffisamment de courant pour brûler des matériaux combustibles ou causer des brûlures corporelles graves.

Obwohl Hauptbatterien eine niedrige Spannung haben, können sie doch bei Kurzschluß oder Erdung genug Strom abgeben, um brennbare Materialien zu entzünden oder Verletzungen bei Personen hervorzurufen.

אף שהסוללות הראשיות הן בעלות מתח נמוך, סוללה
מקוצרת או מוארקת עלולה להפיק זרם מספיק לגרימת
כוויות או להצתת חומרים דליקים.

Sebbene le batterie di alimentazione siano a basso voltaggio, una batteria in corto circuito o a massa può fornire corrente sufficiente da bruciare materiali combustibili o provocare ustioni ai tecnici di manutenzione.

メイン・バッテリーの電圧は低くても、ショートしたり、接地したバッテリーが、作業者にやけどを負わせたり、可燃物を燃やすだけの電流を発生させる場合があります。

Aunque las baterías principales tienen un voltaje bajo, una batería cortocircuitada o con contacto a tierra puede producir la corriente suficiente como para quemar material combustible o provocar quemaduras en el personal.

Safety notice 8

⚠ DANGER

Before removing any FRU, turn off the computer, unplug all power cords from electrical outlets, remove the battery pack, and then disconnect any interconnecting cables.

Avant de retirer une unité remplaçable en clientèle, mettez le système hors tension, débranchez tous les cordons d’alimentation des socles de prise de courant, retirez la batterie et déconnectez tous les cordons d’interface.

Die Stromzufuhr muß abgeschaltet, alle Stromkabel aus der Steckdose gezogen, der Akku entfernt und alle Verbindungskabel abgenommen sein, bevor eine FRU entfernt wird.

לפני סילוק FRU כלשהו, יש לכבות את המחשב, לנתק את כל כבלי החשמל משקעי החשמל, להוציא את מארז הסוללה, ואז לנתק כבלי חיבור אחרים אם יש כאלה.

Prima di rimuovere qualsiasi FRU, spegnere il sistema, scollegare dalle prese elettriche tutti i cavi di alimentazione, rimuovere la batteria e poi scollegare i cavi di interconnessione.

FRU を取り外す前に、 ThinkPad の電源を切って、すべての電源コードをコンセントから外してください。次に、バッテリー・パックを外し、相互接続ケーブルを外してください。

Antes de quitar una FRU, apague el sistema, desenchufe todos los cables de las tomas de corriente eléctrica, quite la batería y, a continuación, desconecte cualquier cable de conexión entre dispositivos.

Laser compliance statement

Some models of Lenovo computer are equipped from the factory with an optical storage device such as a CD-ROM drive or a DVD-ROM drive. Such devices are also sold separately as options. If one of these drives is installed, it is certified in the U.S. to conform to the requirements of the Department of Health and Human Services 21 Code of Federal Regulations (DHHS 21 CFR) Subchapter J for Class 1 laser products. Elsewhere, the drive is certified to conform to the requirements of the International Electrotechnical Commission (IEC) 825 and CENELEC EN 60 825 for Class 1 laser products.

If a CD-ROM drive, a DVD-ROM drive, or another laser device is installed, note the following:

⚠ CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein might result in hazardous radiation exposure.

O uso de controles, ajustes ou desempenho de procedimentos diferentes daqueles aqui especificados pode resultar em perigosa exposição à radiação.

凡未在这里指明的任何控制用法、调整、行为，
都会导致严重后果。

Pour éviter tout risque d’exposition au rayon laser, respectez les consignes de réglage et d’utilisation des commandes, ainsi que les procédures décrites.

Werden Steuer- und Einstellelemente anders als hier festgesetzt verwendet, kann gefährliche Laserstrahlung auftreten.

Az itt előírt eljárásoktól, beállításoktól és vezérlésektől
eltérni a lézersugárzás veszélye miatt kockázatos !

L’utilizzo di controlli, regolazioni o l’esecuzione di procedure diverse da quelle specificate possono provocare l’esposizione a.

Использование элементов настройки и
выполнение процедур иных, чем указано
здесь, может привести к опасному
радиационному облучению.

Použitie kontrôl, úprav alebo iných vykonaní od iných
výrobcov, ako je v tomto špecifikované, mohlo by mať
za následok nebezpečenstvo vystavenia sa vyžiarovaniu.

本書で指定された内容以外の、お客様による整備、調整、または手順を行った場合、レーザー光の放射の危険があります。

El uso de controles o ajustes o la ejecución de procedimientos distintos de los aquí especificados puede provocar la exposición a radiaciones peligrosas.

Opening the CD-ROM drive, the DVD-ROM drive, or any other optical storage device could result in exposure to hazardous laser radiation. There are no serviceable parts inside those drives. **Do not open**.

A CD-ROM drive, a DVD-ROM drive, or any other storage device installed may contain an embedded Class 3A or Class 3B laser diode. Note the following:

⚠ DANGER

Emits visible and invisible laser radiation when open. Do not stare into the beam, do not view directly with optical instruments, and avoid direct exposure to the beam.

Radiação por raio laser ao abrir. Não olhe fixo no feixe de luz, não olhe diretamente por meio de instrumentos óticos e evite exposição direta com o feixe de luz.

开启时会有激光发射时，请勿盯视激光光束，请勿直接查看
视觉仪器，并且避免直接接触在激光光束之中。

Rayonnement laser si carter ouvert. Évitez de fixer le faisceau, de le regarder directement avec des instruments optiques, ou de vous exposer au rayon.

Laserstrahlung bei geöffnetem Gerät. Nicht direkt oder über optische Instrumente in den Laserstrahl sehen und den Strahlungsbereich meiden.

Kinyitáskor lézersugár ! Ne nézzen bele se szabad szemmel, se optikai eszközökkel. Kerülje a sugárnyalábbal való érintkezést!

Aprendo l'unità vengono emesse radiazioni laser. Non fissare il fascio, non guardarlo direttamente con strumenti ottici e evitare l'esposizione diretta al fascio.

Открывая, берегитесь лазерного излучения.
Не смотрите на луч, не разглядывайте его
с помощью оптических инструментов, а также
избегайте прямого воздействия лазерного луча.

Keď je laserová jednotka otvorená. Vyhnite sa priamemu
pohľadu a nehľadte priamo s optickými nástrojmi do ľúča
a vyhnite sa priamemu vystaveniu ľúčov.

開けるとレーザー光が放射されます。光線を見つめたり、光学機械を使って直接見
たりしないでください。

Radiación láser al abrir. No mire fijamente ni examine con instrumental óptico el haz de luz. Evite la exposición directa al haz.

Important service information

This chapter presents the following important service information:

Important:
BIOS and device driver fixes are customer-installable. The BIOS and device drivers are posted on the customer support site: http://consumersupport.lenovo.com/.

Strategy for replacing FRUs

Before replacing parts:

Make sure that all software fixes, drivers, and BIOS downloads are installed before replacing any FRUs listed in this manual.

After a system board is replaced, ensure that the latest BIOS is loaded to the system board before completing the service action.

To download software fixes, drivers, and BIOS, follow the steps below:

1. Go to http://consumersupport.lenovo.com/.
2. Enter the serial number or select a product or use Lenovo smart downloading.
3. Select the BIOS/Driver/Applications and download.
4. Follow the directions on the screen and install the necessary software.

Use the following strategy to prevent unnecessary expense for replacing and servicing FRUs:

- If you are instructed to replace an FRU, but the replacement does not solve the problem, reinstall the original FRU before you continue.
- Some computers have both a processor board and a system board. If you are instructed to replace either of them, and replacing one of them does not solve the problem, reinstall that board, and then replace the other one.
- If an adapter or a device consists of more than one FRU, any of the FRUs may be the cause of the error. Before replacing the adapter or device, remove the FRUs one by one to see if the symptoms change. Replace only the FRU that changed the symptoms.

Attention: The setup configuration on the computer you are servicing may have been customized. Running Automatic Configuration may alter the settings. Note the current configuration settings (using the View Configuration option); then, when service has been completed, verify that those settings remain in effect.

Strategy for replacing a hard disk drive

Always try to run a low-level format before replacing a hard disk drive. This will cause all customer data on the hard disk to be lost. Make sure that the customer has a current backup of the data before performing this action.

Attention: The drive startup sequence in the computer you are servicing may have been changed. Be extremely careful during write operations such as copying, saving, or formatting. If you select an incorrect drive, data or programs can be overwritten.

Important notice for replacing a system board

Some components mounted on a system board are very sensitive. Improper handling can cause damage to those components, and may cause a system malfunction.

Attention: When handling a system board:

- Do not drop the system board or apply any excessive force to it.
- Avoid rough handling of any kind.
- Avoid bending the system board and hard pushing to prevent cracking at each BGA (Ball Grid Array) chipset.

Important information about replacing RoHS compliant FRUs

RoHS, The Restriction of Hazardous Substances in Electrical and Electronic Equipment Directive (2002/95/EC) is a European Union legal requirement affecting the global electronics industry. RoHS requirements must be implemented on Lenovo products placed on the market after June 2006. Products on the market before June 2006 are not required to have RoHS compliant parts. If the original FRU parts are non-compliant, replacement parts can also be non-compliant. In all cases if the original FRU parts are RoHS compliant, the replacement part must also be RoHS compliant.

Note: RoHS and non-RoHS FRU part numbers with the same fit and function are identified with unique FRU part numbers.

Lenovo plans to transit to RoHS compliance well before the implementation date and expects its suppliers to be ready to support Lenovo's requirements and schedule in the EU. Products sold in 2005 and 2006 will contain some RoHS compliant FRUs. The following statement pertains to these products and any product Lenovo produces containing RoHS compliant FRUs.

RoHS compliant FRUs have unique FRU part numbers. Before or after the RoHS implementation date, failed RoHS compliant parts must always be replaced with RoHS compliant ones, so only the FRUs identified as compliant in the system HMM or direct substitutions for those FRUs may be used.

Products marketed before June 2006		Products marketed after June 2006	
Current or original part	**Replacement FRU**	**Current or original part**	**Replacement FRU**
Non-RoHS	Can be Non-RoHS	Must be RoHS	Must be RoHS
Non-RoHS	Can be RoHS		
Non-RoHS	Can sub to RoHS		
RoHS	Must be RoHS		

Note: A direct substitution is a part with a different FRU part number that is automatically shipped by the distribution center at the time of the order.

General checkout

This chapter presents the following information:

- "What to do first" on page 20
- "Power system checkout" on page 21

Before you go to the checkout, make sure to read the following important notes:

Important notes:

- **Only certified trained personnel can service the computer.**
- **Before replacing any FRU, read the entire page on removing and replacing FRUs.**
- **When you replace FRUs, use new nylon-coated screws.**
- **Be extremely careful during such write operations as copying, saving, or formatting.** Drives in the computer that you are servicing sequence might have been altered. If you select an incorrect drive, data or programs might be overwritten.
- **Replace an FRU only with another FRU of the correct model.** When you replace an FRU, make sure that the machine model and the FRU part number are correct by referring to the FRU parts list.
- **An FRU should not be replaced just because of a single, unreproducible failure.** Single failures can occur for a variety of reasons that have nothing to do with a hardware defect, such as cosmic radiation, electrostatic discharge, or software errors. Consider replacing an FRU only when a problem recurs. If you suspect that an FRU is defective, clear the error logs and run the test again. If the error does not recur, do not replace the FRU.
- **Be careful not to replace a nondefective FRU.**

What to do first

When you do return an FRU, you must include the following information in the parts exchange form or parts return form that you attach to it:

1. Name and phone number of servicer
2. Date of service
3. Date on which the machine failed
4. Date of purchase
5. Procedure index and page number in which the failing FRU was detected
6. Failing FRU name and part number
7. Machine type, model number, and serial number
8. Customer's name and address

Note for warranty: During the warranty period, the customer may be responsible for repair costs if the computer damage was caused by misuse, accident, modification, unsuitable physical or operating environment, or improper maintenance by the customer.

The following is a list of some common items that are not covered under warranty and some symptoms that might indicate that the system was subjected to stress beyond normal use.

Before checking problems with the computer, determine whether the damage is covered under the warranty by referring to the following list:

The following are not covered under warranty:

- LCD panel cracked from the application of excessive force or from being dropped
- Scratched (cosmetic) parts
- Distortion, deformation, or discoloration of the cosmetic parts
- Plastic parts, latches, pins, or connectors that have been cracked or broken by excessive force
- Damage caused by liquid spilled into the system
- Damage caused by the improper insertion of a PC Card or the installation of an incompatible card
- Improper disk insertion or use of an optical drive
- Diskette drive damage caused by pressure on the diskette drive cover, foreign material in the drive, or the insertion of a diskette with multiple labels
- Damaged or bent diskette eject button
- Fuses blown by attachment of a nonsupported device
- Forgotten computer password (making the computer unusable)
- Sticky keys caused by spilling a liquid onto the keyboard
- Use of an incorrect AC adapter on laptop products

The following symptoms might indicate damage caused by nonwarranted activities:

- Missing parts might be a symptom of unauthorized service or modification.
- If the spindle of a hard disk drive becomes noisy, it may have been subjected to excessive force, or dropped.

Power system checkout

To verify a symptom, follow the steps below:

1. Turn off the computer.
2. Remove the battery pack.
3. Connect the AC adapter.
4. Make sure that power is supplied when you turn on the computer.
5. Turn off the computer.
6. Disconnect the AC adapter and install the charged battery pack.
7. Make sure that the battery pack supplies power when you turn on the computer.

If you suspect a power problem, see the appropriate one of the following power supply checkouts:

- "Checking the AC adapter" on page 21
- "Checking operational charging" on page 21
- "Checking the battery pack" on page 22

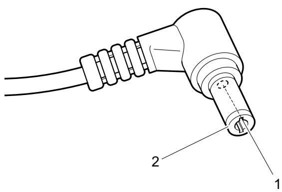
Checking the AC adapter

You are here because the computer fails only when the AC adapter is used.

- If the power-on indicator does not turn on, check the power cord of the AC adapter for correct continuity and installation.
- If the computer does not charge during operation, go to "Checking operational charging".

To check the AC adapter, follow the steps below:

1. Unplug the AC adapter cable from the computer.
2. Measure the output voltage at the plug of the AC adapter cable. See the following figure:



Pin	Voltage (V DC)
1	+20
2	0

Note: Output voltage for the AC adapter pin No. 2 may differ from the one you are servicing.

3. If the voltage is not correct, replace the AC adapter.
4. If the voltage is acceptable, do the following:

- Replace the system board.
- If the problem persists, go to "Lenovo IdeaPad U510" on page 27.

Note: Noise from the AC adapter does not always indicate a defect.

Checking operational charging

To check whether the battery charges properly during operation, use a discharged battery pack or a battery pack that has less than 50% of the total power remaining when installed in the computer.

Perform operational charging. If the battery status indicator or icon does not light on, remove the battery pack and let it return to room temperature. Reinstall the battery pack. If the charge indicator or icon is still off, replace the battery pack.

If the charge indicator still does not light on, replace the system board. Then reinstall the battery pack. If it is still not charged, go to the next section.

Checking the battery pack

Battery charging does not start until the Power Meter shows that less than 95% of the total power remains; under this condition the battery pack can charge to 100% of its capacity. This protects the battery pack from being overcharged or from having a shortened life.

To check your battery, move your cursor to the Power Meter icon in the icon tray of the Windows® taskbar and wait for a moment (but do not click it), and the percentage of battery power remaining is displayed. To get detailed information about the battery, double-click the Power Meter icon.

Note: If the battery pack becomes hot, it may not be able to be charged. Remove it from the computer and leave it at room temperature for a while. After it cools down, reinstall and recharge it.

Related service information

This chapter presents the following information:

Restoring the factory contents by using Recovery Disc Set

When the hard disk drive or solid state drive is replaced because of a failure, no product recovery program is on the new drive. In this case, you must use the *Recovery Disc Set* for the computer. Order the *Recovery Disc Set* and the drive at the same time so that you can recover the new drive with the pre-installed software when they arrive.

The *Recovery Disc Set* consists of the following set of DVDs to restore the computer to the original factory configuration.

Start Recovery Disc (one disc)

This disc is used to format the hard disk drive and initiate the recovery process.

Operating System Recovery Disc (one or more discs)

This disc restores the Microsoft Windows operating system.

Applications and Drivers Recovery Disc (one or more discs)

This disc restores the pre-installed applications and drivers on the computer.

Supplemental Recovery Disc

This disc contains additional content, such as software for specific models and updates to the software that was preloaded on the computer. Not all recovery disc sets come with a *Supplemental Recovery Disc*.

To restore the computer to the original factory configuration using the recovery disc set, do the following:

1. Insert the bootable *Start Recovery Disc* into the optical drive.
2. Start the computer. When the Lenovo logo comes up, immediately press F12; on the boot sequence menu, select the optical drive as the first boot-up device. The computer will boot from the *Start Recovery Disc*. Follow the on-screen instructions to begin the recovery process.
3. Read the license. If you agree with the terms, select **I accept these terms and conditions** and then click **Next**.
4. Insert the **Operating System Recovery Disc** when prompted and click **Yes** to begin the operating system recovery process.
5. Insert the *Applications and Drivers Recovery Disc* when prompted and then click **OK** to begin the applications and drivers recovery process.
6. If you have a *Supplemental Recovery Disc*, insert it when prompted and click **Yes**. If you do not have a *Supplemental Recovery Disc*, click **No**.

7. When all of the data has been copied from the last disc in the set, remove the disc and restart the computer.

> **Note:** The remainder of the recovery process is fully automated and no action is required by you. The computer will restart into the Windows desktop several times and you might experience periods when no activity is apparent on the screen for several minutes at a time. This is normal.

8. When the recovery process is complete, the Welcome to the Microsoft Windows screen is displayed. Follow the instructions on the screen to complete the Windows setup.

Passwords

As many as three passwords may be needed for any Lenovo computer: the power-on password (POP), the hard disk password (HDP), and the supervisor password (SVP).

If any of these passwords has been set, a prompt for it appears on the screen whenever the computer is turned on. The computer does not start until the password is entered.

Exception: If only an SVP is installed, the password prompt does not appear when the operating system is booted.

Power-on password

A power-on password (POP) protects the system from being powered on by an unauthorized person. The password must be entered before an operating system can be booted.

Hard-disk password

There are two hard-disk passwords (HDPs):

+ User HDP - for the user

+ Master HDP - for the system administrator, who can use it to get access to the hard disk drive even if the user has changed the user HDP

Attention: If the user HDP has been forgotten, check whether a master HDP has been set. If it has, it can be used for access to the hard disk drive. If no master HDP is available, neither Lenovo nor Lenov authorized service technicians provide any services to reset either the user or the master HDP, or to recover data from the hard disk drive. The hard disk drive can be replaced for a scheduled fee.

Supervisor password

A supervisor password (SVP) protects the system information stored in the BIOS Setup Utility. The user must enter the SVP in order to get access to the BIOS Setup Utility and change the system configuration.

Attention: If the SVP has been forgotten and cannot be made available to the servicer, there is no service procedure to reset the password. The system board must be replaced for a scheduled fee.

Power management

Note: Power management modes are not supported for APM operating system.

To reduce power consumption, the computer has three power management modes: screen blank, sleep (standby), and hibernation.

Screen blank state

If the time set on the "Turn off monitor" timer in the operating system expires, the LCD backlight turns off. You can also turn off the LCD backlight by pressing F11.

To end screen blank state and resume normal operation, press F11.

Sleep (standby) state

When the computer enters sleep (standby) state, the following events occur in addition to what occurs in screen blank state:

- The LCD is powered off.
- The hard disk drive is powered off.
- The CPU stops.

Putting your computer into sleep state

If you will be away from your computer for only a short time, put the computer to sleep.

When the computer is in sleep mode, you can quickly wake it to resume use, bypassing the startup process.

To put the computer to sleep, do one of the following:

- Close the display panel.
- Press the power button.
- Open the charms and then select **Settings** → **Power** → **Sleep**.

To wake the computer, do one of the following.

- Press the power button.
- Press any key on the keyboard.

Also, in the following event, the computer automatically returns from sleep (standby) state and resumes the operation:

- The time set on the resume timer elapses.

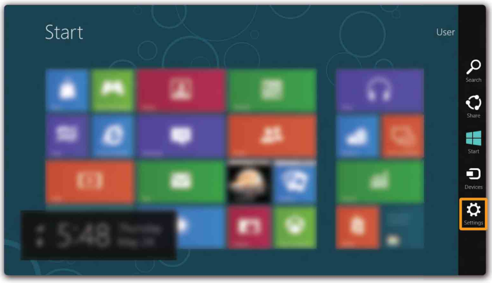
Note: Wait until the power indicator light starts blinking (indicating that the computer is in sleep mode) before you move your computer. Moving your computer while the hard disk is spinning can damage the hard disk, causing loss of data.

Shutting down the computer

If you are not going to use your computer for a long time, shut it down.To shut down your computer:

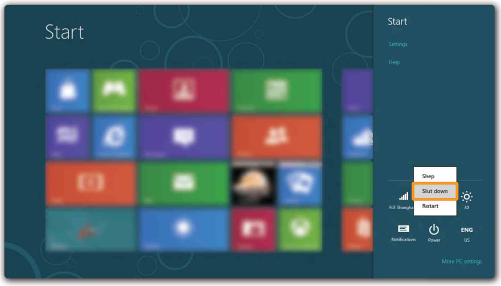
1. Open the charms, select **Settings** .

1



2. Select **Power** → **Shut down**.

2



Lenovo IdeaPad U510

This chapter presents the following product-specific service references and product-specific parts information:

Specifications

The following table lists the specifications of the Lenovo IdeaPad U510:

Table 1. Specifications

Feature	Description
Processor	See the system properties of your computer, you can do this as follows: Click **Control Panel**, then click **Hardware and Sound**, click **Device Manager** under **Devices and Printers** and double click **Processors**.
Core Chipset	Intel Panther point HM77
Bus architecture	FDI DMI 1333MHz +1600 MHZ DDR3 bus PCIE bus
Graphic Chipset	N13GS-R, 17W
Display	16:9 (1,366 × 768 pixels)
Standard memory	DDR3-1333 or DDR3-1600 8 GB SODIMM × 2
CMOS RAM	256 bytes
Hard disk drive	2.5-inch, 9.5 mm or 2.5-inch, 7.0 mm
Optical drive	NA
SSD	24G, 32G mSATA

Table 1. Specifications (continued)

Feature	Description
I/O ports	HDMI port × 1
	USB 3.0 × 1, USB 2.0 × 2
	2 in 1 slot × 1 (MMC, SD)
Audio	Combo audio jack × 1 Speaker × 2 Built-in microphone
Video	HDMI port × 1
WLAN	Intel Wifi 2 × 2 GN
WWAN	Intel WiMAX/Wifi 1 × 2 BGN
Bluetooth	Option
Keyboard	New Key Board
Touch pad	One piece TouchPad
Integrated camera	0.3 or 1.0 mega pixels
Battery	Li-Polymer
AC adapter	65W
Pre-installed operating system	Win8 (Win7 driver mini-support)

Status indicators

The system status indicators below show the computer status:

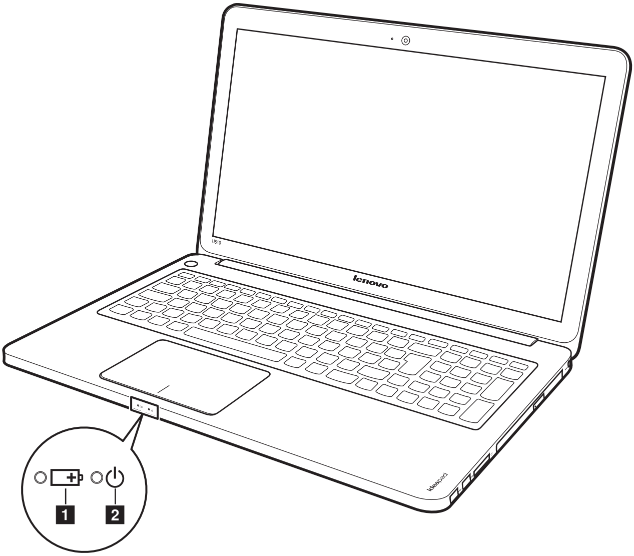


Table 2. Status indicators

Symbol	Indicator status	Meaning
1 Battery status indicator	On (solid white)	The battery has more than 20% charge.
	Solid amber	The battery has between 5% and 20% charge.
	Fast blinking amber	The battery has less than 5% charge.
	Slow blinking amber	The battery is being charged. When battery charge reaches 20%, the blinking color changes to white.
	Slow blinking white	The battery has between 20% and 80% charge and is still charging. When the battery reaches 80% charge the light will stop blinking, but charg-ing will continue until the bat-tery is fully charged.
	Off	The battery is detached.
2 Power indicator	On (solid white)	The computer is powered on.
	Blinking	The computer is in sleep mode.
	Off	The computer is powered off.

Fn key combinations

The following table shows the function of each combination of Fn with a function key.

Table 3. Fn key combinations

Key combination	Description
Fn + Home:	Activate the pause function.
Fn + End:	Activate the break function.
Fn + PgUp:	Enable/disable the scroll lock.
Fn + PgDn:	Activate the system request function.
Fn + Space (on select models):	Turn on/off the keyboard backlight.

Hotkeys

The hotkeys are located in the function key row of the keyboard.By pressing the appropriate hotkey, you can change system settings instantly.

The following describes the function of each hotkey.

Table 4. Hotkeys

Hotkeys	Description
F1:	Mutes/unmutes the sound.
F2:	Decreases the volume level.
F3:	Increases the volume level.
F4:	Closes the currently active window.
F5:	Refreshes the desktop or the currently active window.
F6:	Enables/disables the touchpad.
F7:	Enables/disables airplane mode.
F8:	Displays all currently open apps.
F9:	Turn on/off the backlight of the LCD screen.
F10:	Opens the interface for the display device switch to select this notebook or an external display.
F11:	Decreases display brightness.
F12:	Increases display brightness.

FRU replacement notices

This section presents notices related to removing and replacing parts. Read this section carefully before replacing any FRU.

Screw notices

Loose screws can cause a reliability problem. In the Lenovo computer, this problem is addressed with special nylon-coated screws that have the following characteristics:

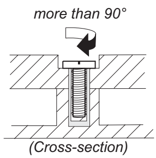
- They maintain tight connections.
- They do not easily come loose, even with shock or vibration.
- They are harder to tighten.
- Each one should be used only once.

Do the following when you service this machine:

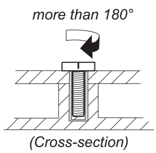
- Keep the screw kit in your tool bag.
- Always use new screws.
- Use a torque screwdriver if you have one.

Tighten screws as follows:

- **Plastic to plastic**
  Turn an additional 90° after the screw head touches the surface of the plastic part:



- **Logic card to plastic**
  Turn an additional 180° after the screw head touches the surface of the logic card:



- **Torque driver**
  If you have a torque screwdriver , refer to the "Torque" column for each step.
- Make sure that you use the correct screws. If you have a torque screwdriver, tighten all screws firmly to the torque shown in the table. **Never use a screw that you removed. Use a new one. Make sure that all screws are tightened firmly**.
- Ensure torque screwdrivers are calibrated correctly following country specifications.

Removing and replacing an FRU

This section presents exploded figures with the instructions to indicate how to remove and replace the FRU. Make sure to observe the following general rules:

1. Do not attempt to service any computer unless you have been trained and certified. An untrained person runs the risk of damaging parts.
2. Before replacing any FRU, review “FRU replacement notices” on page 32.
3. Begin by removing any FRUs that have to be removed before the failing FRU. Any of such FRUs are listed at the top of the page. Remove them in the order in which they are listed.
4. Follow the correct sequence in the steps to remove the FRU, as given in the figures by the numbers in square callouts.
5. When turning a screw to replace an FRU, turn it in the direction as given by the arrow in the figure.
6. When removing the FRU, move it in the direction as given by the arrow in the figure.
7. To put the new FRU in place, reverse the removal procedures and follow any of the notes that pertain to replacement. For information about connecting and arranging internal cables, see “Locations” on page 64.
8. When replacing an FRU, use the correct screw as shown in the procedures.

> ⚠ **DANGER**
> Before removing any FRU, turn off the computer, unplug all power cords from electrical outlets, remove the battery pack, and then disconnect any of the interconnecting cables.

Attention: After replacing an FRU, do not turn on the computer until you have made sure that all screws, springs, and other small parts are in place and none are loose inside the computer. Verify this by shaking the computer gently and listening for rattling sounds. Metallic parts or metal flakes can cause electrical short circuits.

Attention: The system board is sensitive to, and can be damaged by, electrostatic discharge. Before touching it, establish personal grounding by touching a ground point with one hand or using an electrostatic discharge (ESD) strap (P/N 6405959) to remove potential shock reasons.

Note: The illustrations used in this section are of the Lenovo U410, unless otherwise stated.

1010 Keyboard

Figure 1. Removal steps of keyboard

Loosen the keyboard with a flat blade in the direction shown by arrow **1**. Lift the keyboard a little in the direction shown by arrow **2**.

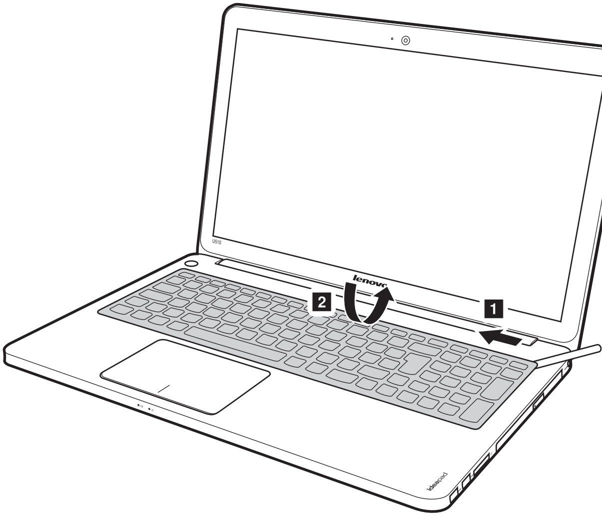
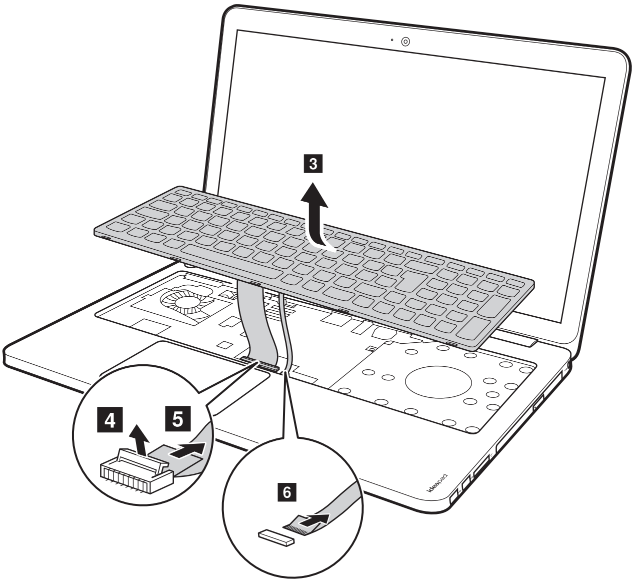


Figure 1. Removal steps of keyboard (continued)

Lift the keyboard a little **3**, and then detach the connectors in the direction shown by arrows **4** **5** and **6**.



When installing: Make sure that the FPC connectors are attached firmly.

1020 Battery pack

For access, remove this FRU:

- "1010 Keyboard" on page 34

⚠ DANGER

- Only use the battery specified in the parts list for your computer. Any other battery could ignite or explode.
- Make sure the battery has been disconnected already before replacing any devices.

Figure 2. Removal steps of battery pack

Remove five screws **1** .

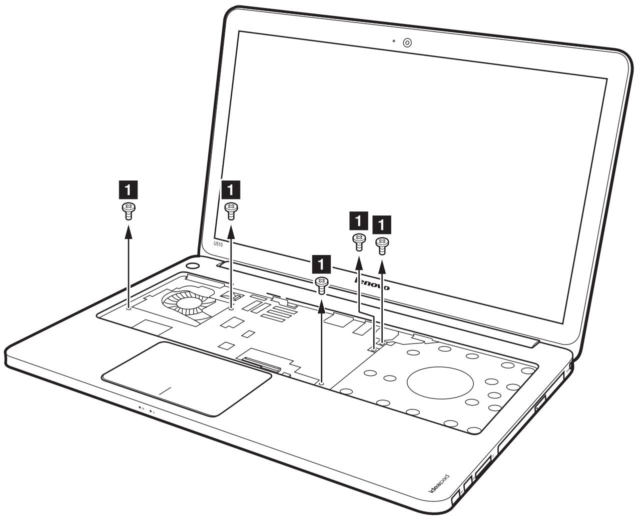
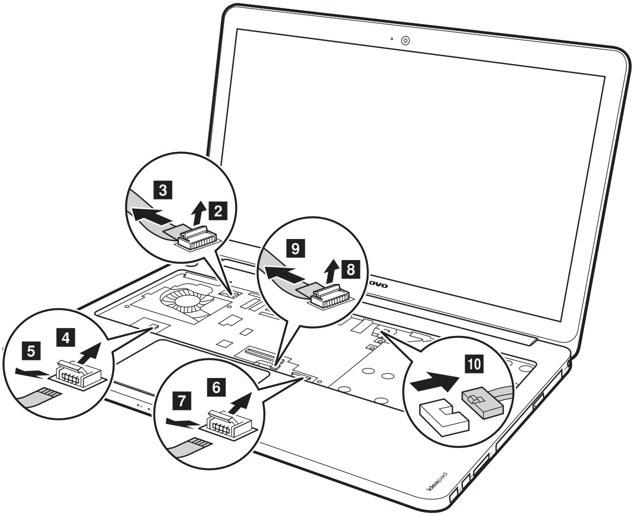


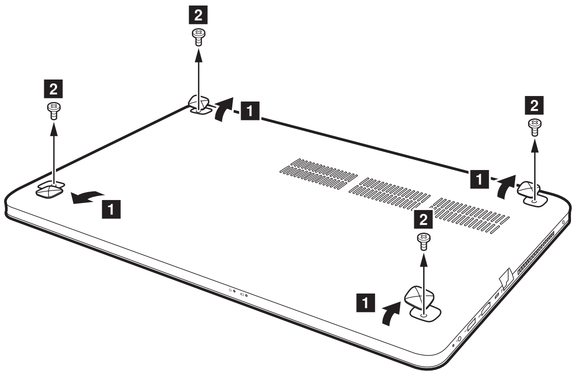
Figure 2. Removal steps of battery pack (continued)

Unplug the speakers cable connector in the direction shown by arrow **10**, disconnect power board connector in the direction shown by arrows **2** **3**, system indicator board connector in the direction shown by arrows **4** **5**, USB board connector in the direction shown by arrows **6** **7**, touchpad connector in the direction shown by arrows **8** **9**.



When installing: Make sure that all the connectors are attached firmly.

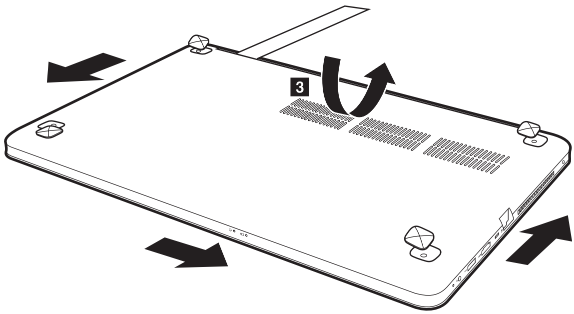
Open four rubber foot pads with a screw driver in the direction shown by arrows **1**, then remove four screws **2**.



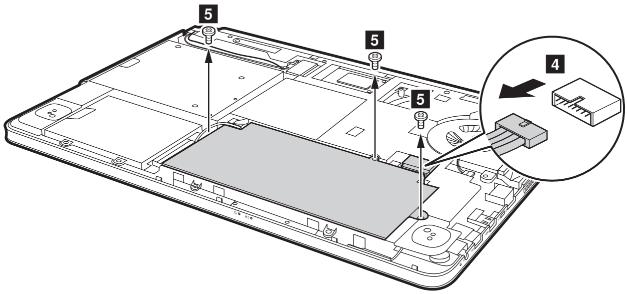
Step	Screw (quantity)	Color	Torque
1	M2.5 × 10 mm, flat-head, nylok-coated (4)	Black	2.5 kgfcm

Figure 2. Removal steps of battery pack (continued)

Open the back cover along the device frame with a flat blade in the direction shown by arrows and then lift the back cover in the direction shown by arrow **3**.



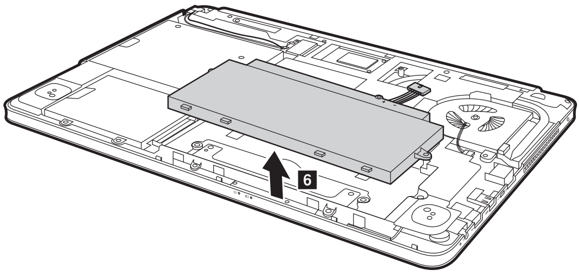
Unplug the battery connector in the direction shown by arrow **4** first, then remove three screws **5**.



Step	Screw (quantity)	Color	Torque
3	M2.5 × 6 mm, flat-head, nylokcoated (3)	Silver	2.5 kgfcm

Figure 2. Removal steps of battery pack (continued)

Remove the battery in the direction shown by arrow **6** .



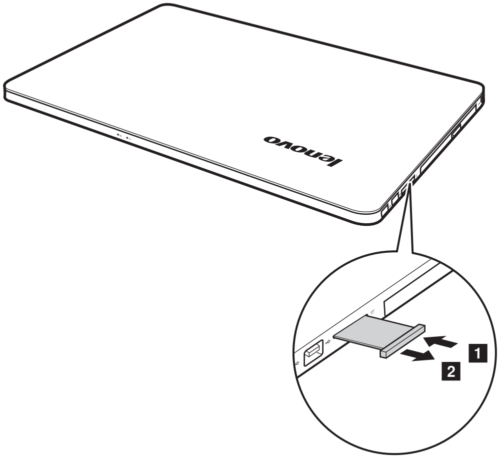
When installing:

- Separate the antenna from other cables. Put them in different tracks to improve signal reception.
- Connect the battery last.

1030 Dummy card

Figure 3. Removal steps of dummy card

Remove the dummy card in the direction shown by arrows 1 2.



1040 Hard disk drive

For access, remove this FRU:

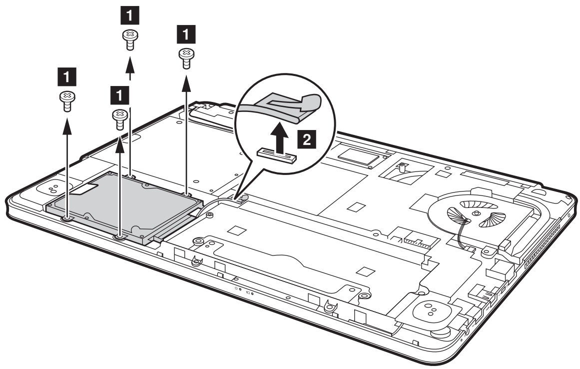
- "1010 Keyboard" on page 34
- "1020 Battery pack" on page 36

Attention:

- **Do not drop the hard disk drive or apply any physical shock to it.** The hard disk drive is sensitive to physical shock. Improper handling can cause damages and permanent loss of data.
- Before removing the drive, suggest the customer to backup all the information on it if possible.
- Never remove the drive while the system is operating or is in suspend mode.

Figure 4. Removal steps of hard disk drive

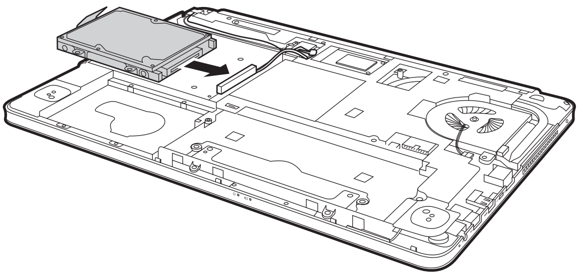
Remove the frame fixing screws **1**. Pull the tab in the direction shown by arrow **2**.



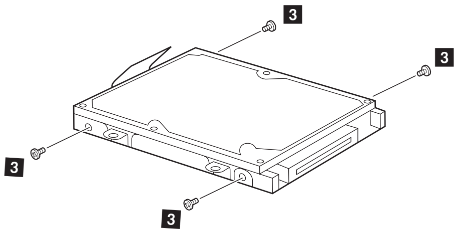
Step	Screw (quantity)	Color	Torque
1	M2.5 × 6 mm, flat-head, nylok-coated (4)	Silver	2.5 kgfcm

Figure 4. Removal steps of hard disk drive (continued)

Hold the SATA receptacle connector with one hand and pull the hard disk drive (secured in the metal frame) in the direction shown below to detach the connector.



Remove four screws **3** and detach the metal frame from the hard disk drive.



Step	Screw (quantity)	Color	Torque
3	M3.0 × 3.0 mm, flat-head, nylok-coated (4)	Black	4.0 kgfcm

When installing: Make sure that the HDD connector is attached firmly.

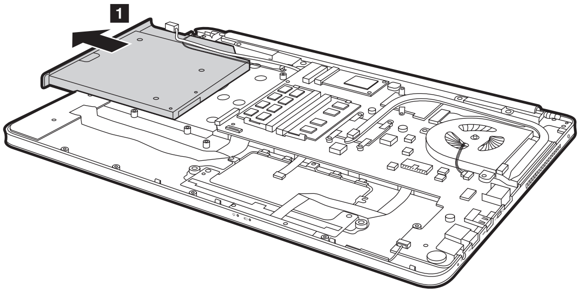
1050 Optical drive

For access, remove these FRUs in order:

- "1010 Keyboard" on page 34
- "1020 Battery pack" on page 36
- "1030 Dummy card" on page 40

Figure 5. Removal steps of optical drive

Pull the optical drive out in the direction shown by arrow **1**.



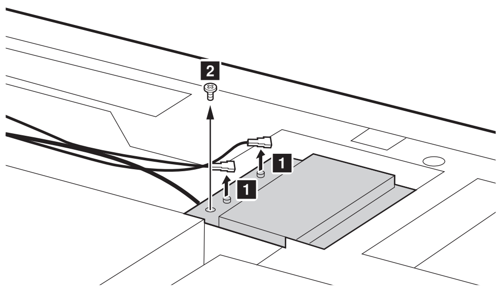
1060 PCI Express Mini Card for wireless LAN/WAN

For access, remove this FRU:

- “1010 Keyboard” on page 34
- “1020 Battery pack” on page 36

Figure 6. Removal steps of PCI Express Mini Card for wireless LAN/WAN

Disconnect the two wireless LAN cables (black,white) **1**, and then remove the screw **2**.



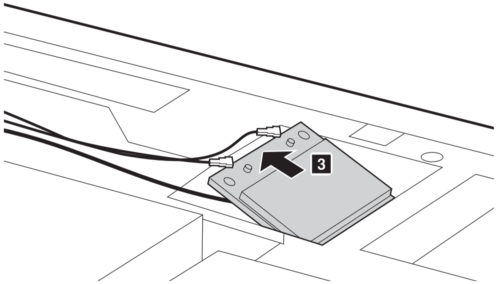
In step **1**, unplug the jacks by using the removal tool antenna RF connector (P/N: 08K7159), or pick up the connectors with your fingers and gently unplug them in the direction shown by arrows.

Notes: wireless LAN card has 2 cables in step **1**.
wireless LAN card in some models may have 3 cables in step **1**.

Step	Screw (quantity)	Color	Torque
1	M2.5 × 4 mm, flat-head, nylok-coated (1)	Black	2.5 kgfcm

Figure 6. Removal steps of PCI Express Mini Card for wireless LAN/WAN (continued)

Remove the card in the direction shown by arrow **3**.



When installing:

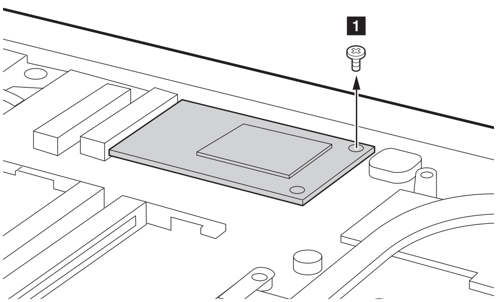
- In models with a wireless LAN card that has two antenna connectors, plug the black cable (1st) (MAIN) into the jack labeled **1**, and the white cable (2nd) (AUX) into jack labeled **2** on the card.
- In models with a wireless LAN card that has three antenna connectors, plug the black cable (1st) (MAIN) into the jack labeled **1**, the grey cable (3rd) into jack labeled **3**, and the white cable (2nd) (AUX) into jack labeled **2** on the card.

1070 SSD Card

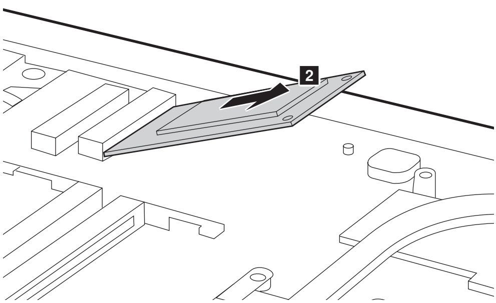
For access, remove these FRUs in order:
- "1020 Battery pack" on page 36

Figure 7. Removal steps of SSD Card

Remove the screw 1.



Remove the card in the direction shown by arrow 2.



Step	Screw (quantity)	Color	Torque
1	M2.0 × 3.0 mm, flat-head, nylok-coated (1)	Black	1.8 kgfcm

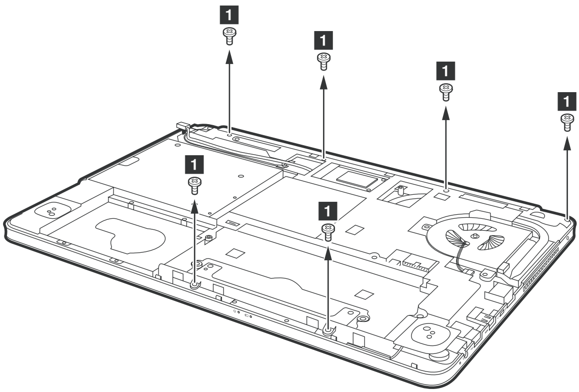
1080 Low-frame module

For access, remove these FRUs in order:

- "1010 Keyboard" on page 34
- "1020 Battery pack" on page 36
- "1040 Hard disk drive" on page 41
- "1050 Optical drive" on page 43

Figure 8. Removal steps of low-frame module

Remove six screws **1**.



Step	Screw (quantity)	Color	Torque
1	M2.5 x 6.0 mm, flat-head, nylok-coated (1)	Silver	2.5 kgfcm

Lift the power assembly in the direction shown by arrow **2**.

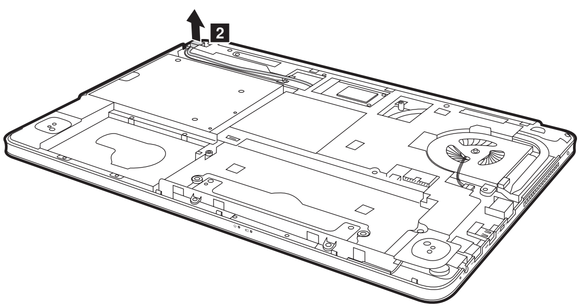
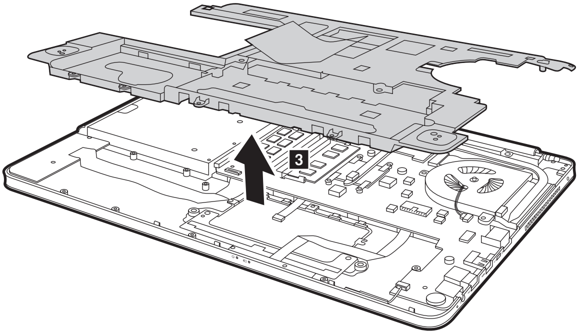


Figure 8. Removal steps of low-frame module (continued)

Lift the Low-frame module in the direction as shown by arrow **3**.

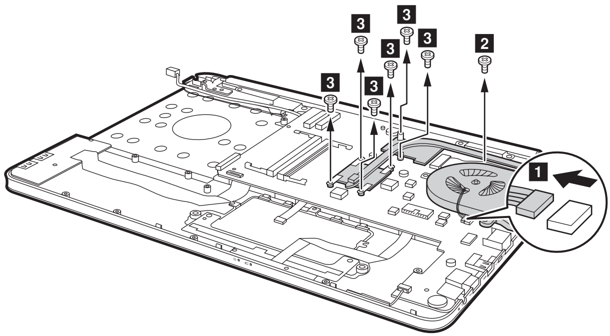


1090 Fan assembly and Heat Sink assembly

For access, remove this FRU:
- “1010 Keyboard” on page 34
- “1020 Battery pack” on page 36
- “1040 Hard disk drive” on page 41
- “1050 Optical drive” on page 43
- “1080 Low-frame module” on page 47

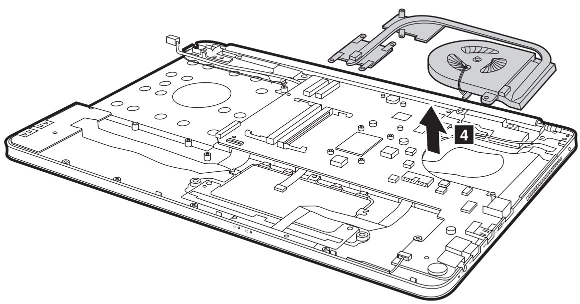
Figure 9. Removal steps of fan assembly and heat sink assembly

Unplug the fan connector in the direction as shown by arrow **1**. Remove screw **2** and six screws **3**.



Step	Screw (quantity)	Color	Torque
1	M2.5 × 4 mm, flat-head, nylok-coated (1) M2.0 × 3.0 mm, flat-head, nylok-coated (6)	Black Silver	2.5 kgfcm 1.8 kgfcm

Lift the fan assembly and heat sink assembly in the direction shown by arrow **4**. Be careful not to damage the connector.



When installing: Make sure that the fan connector is attached firmly to the system board.

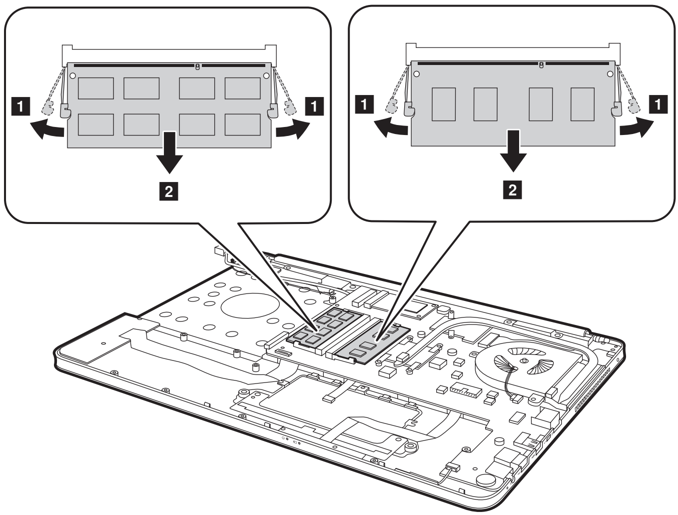
1100 DIMM

For access, remove these FRUs in order:

- "1010 Keyboard" on page 34
- "1020 Battery pack" on page 36
- "1080 Low-frame module" on page 47

Figure 10. Removal steps of DIMM

Release the two latches on both edges of the socket at the same time in the direction shown by arrows **1**, and then unplug the DIMM in the direction shown by arrow **2**.



When installing: Insert the notched end of the DIMM into the socket. Push the DIMM firmly, and pivot it until it snaps into the place. Make sure that it is firmly fixed in the slot and difficult to be moved.

1110 System board

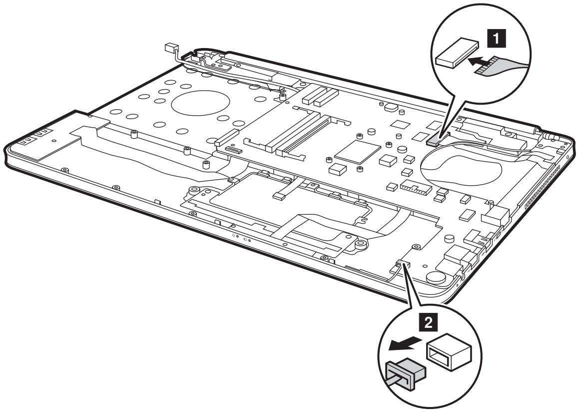
Important notices for handling the system board:
When handling the system board, bear the following in mind.
- Be careful not to drop the system board on a bench top that has a hard surface, such as metal, wood, or composite.
- Avoid rough handling of any kind.
- In the whole process, make sure not to drop or stack the system board.
- If you put a system board down, make sure to put it only on a padded surface such as an ESD mat or conductive corrugated material.

For access, remove these FRUs in order:

- “1010 Keyboard” on page 34
- “1020 Battery pack” on page 36
- “1030 Dummy card” on page 40
- “1040 Hard disk drive” on page 41
- “1050 Optical drive” on page 43
- “1060 PCI Express Mini Card for wireless LAN/WAN” on page 44
- “1070 SSD Card” on page 46
- “1080 Low-frame module” on page 47
- “1090 Fan assembly and Heat Sink assembly” on page 49
- “1100 DIMM” on page 50

Figure 11. Removal steps of system board (continued)

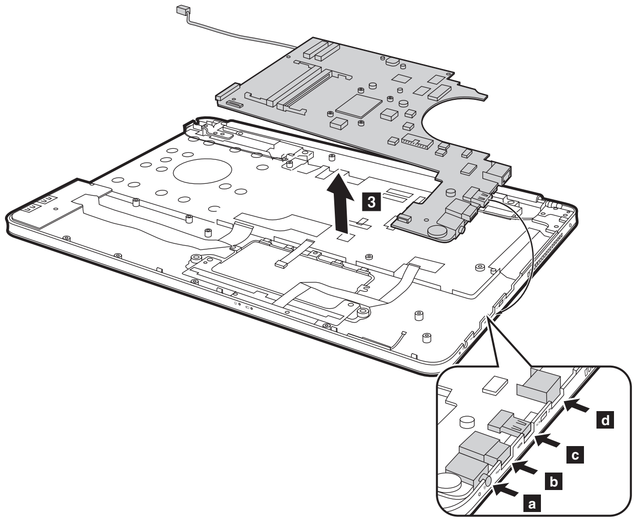
Disconnect the LCD connector in the direction shown by arrow **1**, unplug Bluetooth connector in the direction shown by arrow **2**.



When installing: Make sure that all the connectors are attached firmly.

Figure 11. Removal steps of system board (continued)

Remove the system board in the direction shown by arrow **3**.



When installing: When attaching the system board to the base cover, adjust the placement of the combo audio jack, USB, HDMI, RJ-45 ports as shown in **a** **b** **c** **d**, and make sure that they are attached to the holes on the base cover as shown. Improper placement of those jacks might cause a damage.

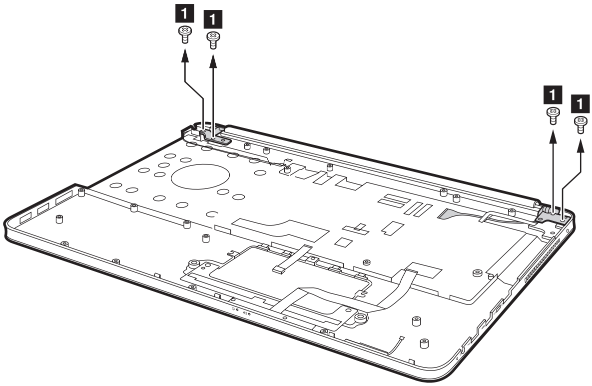
1120 LCD unit

For access, remove these FRUs in order:

- "1010 Keyboard" on page 34
- "1020 Battery pack" on page 36
- "1030 Dummy card" on page 40
- "1040 Hard disk drive" on page 41
- "1050 Optical drive" on page 43
- "1060 PCI Express Mini Card for wireless LAN/WAN" on page 44
- "1070 SSD Card" on page 46
- "1080 Low-frame module" on page 47
- "1090 Fan assembly and Heat Sink assembly" on page 49
- "1100 DIMM" on page 50
- "1110 System board" on page 51

Figure 12. Removal steps of LCD unit

Remove four screws **1**.



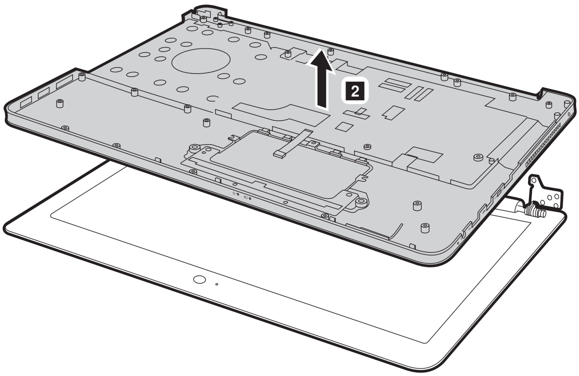
Step	Screw (quantity)	Color	Torque
1	M2.5 × 4 mm, flat-head, nylok-coated	Black	2.5 kgfcm

When installing:

- Route the antenna cables along the cable guides. As you route the cables, make sure that they are not subjected to any tension. Tension could cause the cables to be damaged by the cable guides, or a wire to be broken.
- Make sure that the LCD connector is attached firmly and make sure that you do not pinch the antenna cables when you attach the LCD assembly. Route the LCD cable along the cable guides.

Figure 12. Removal steps of LCD unit (continued)

Remove the LCD unit in the direction shown by arrow **2**.



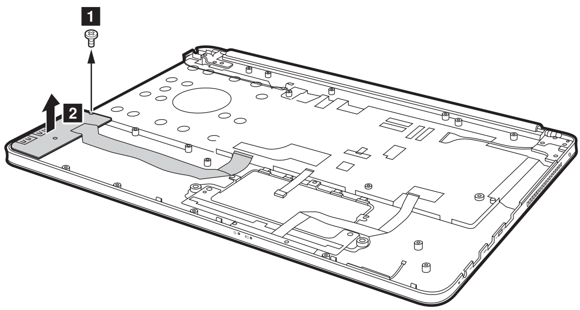
1130 Base cover, USB board, bluetooth card, power board and speakers

For access, remove these FRUs in order:

- “1010 Keyboard” on page 34
- “1020 Battery pack” on page 36
- “1030 Dummy card” on page 40
- “1040 Hard disk drive” on page 41
- “1050 Optical drive” on page 43
- “1060 PCI Express Mini Card for wireless LAN/WAN” on page 44
- “1070 SSD Card” on page 46
- “1080 Low-frame module” on page 47
- “1090 Fan assembly and Heat Sink assembly” on page 49
- “1100 DIMM” on page 50
- “1110 System board” on page 51
- “1120 LCD unit” on page 54

Figure 13. Base cover, USB board, bluetooth card, power board and speakers

Remove screw **1**, and then remove the USB board in the direction shown by arrow **2**.

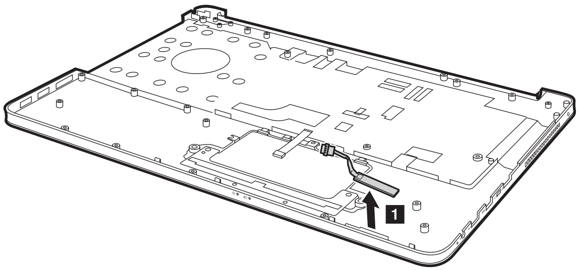


Step	Screw (quantity)	Color	Torque
1	M2.5 × 4 mm, flat-head, nylok-coated (1)	Black	2.5 kgfcm

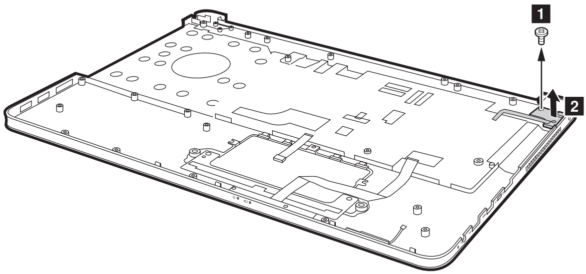
When installing: When attaching the USB board to the base cover, adjust the placement of the USB jacks as shown , and make sure that both of the USB jacks are attached to the holes on the base cover as shown. Improper placement of the jacks might cause a damage.

Figure 13. Base cover, USB board, bluetooth card, power board and speakers (continued)

Remove the bluetooth card in the direction shown by arrow **1**.



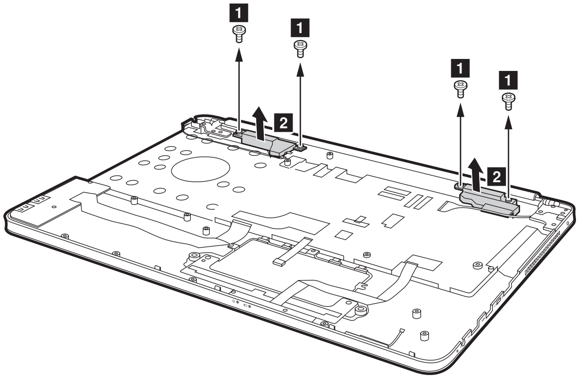
Remove the screw **1** to lift the power board in the direction shown by arrow **2**.



Step	Screw (quantity)	Color	Torque
1	M2.5 × 4 mm, flat-head, nylok-coated (1)	Black	2.5 kgfcm

Figure 13. Base cover, USB board, bluetooth card, power board and speakers (continued)

Remove four screws **1**, and then remove the speakers in the direction shown by arrows **2**.



Step	Screw (quantity)	Color	Torque
1	M2.5 × 2.0 mm, flat-head, nylok-coated (4)	Black	2.5 kgfcm

Note: Applying labels to the base cover

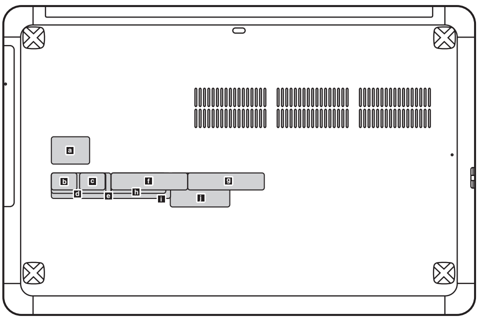
The new base cover FRU is shipped with a kit containing labels of several kinds. When you replace the base cover, you need to apply the following label:

The following labels need to be peeled off from the old base cover, and need to be put on the new base cover.

a	SIRIM BT Label
b	SIRIM WLAN Label
c	INDONESIA Label for B/T
d	BT Label for US/CA/TW
e	B/T (BRAZIL)
f	B/T (ISRAEL)
g	WLAN Label for ISRAEL
h	WLAN Label for INDONESIA or WLAN Label for US/CA/TW or WLAN Label for US/TW
i	WLAN Label for BRAZIL or WLAN Label for ISRAEL
j	INDONESIA LABEL

For some models, you also need to apply one or two FCC labels. Check the old base cover; if it has one or two FCC labels, find duplicates of them in the label kit and apply them to the new base cover.

For the location of each label, refer to the following figure:



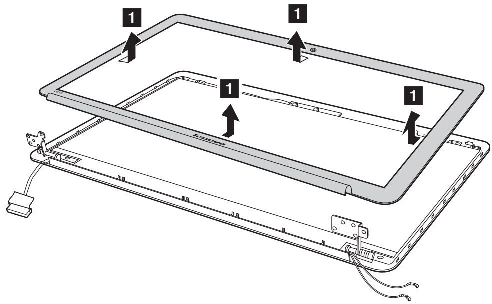
1140 LCD front bezel

For access, remove these FRUs in order:

- “1010 Keyboard” on page 34
- “1020 Battery pack” on page 36
- “1030 Dummy card” on page 40
- “1040 Hard disk drive” on page 41
- “1050 Optical drive” on page 43
- “1060 PCI Express Mini Card for wireless LAN/WAN” on page 44
- “1070 SSD Card” on page 46
- “1080 Low-frame module” on page 47
- “1090 Fan assembly and Heat Sink assembly” on page 49
- “1100 DIMM” on page 50
- “1110 System board” on page 51
- “1120 LCD unit” on page 54

Figure 14. Removal steps of LCD front bezel

Remove the LCD front bezel in the direction shown by arrows 1.



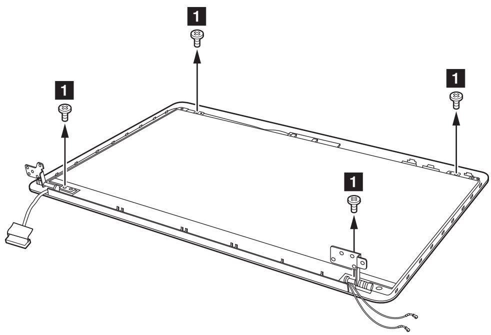
1150 LCD panel, LCD cable and hinges

For access, remove these FRUs in order:

- "1010 Keyboard" on page 34
- "1020 Battery pack" on page 36
- "1030 Dummy card" on page 40
- "1040 Hard disk drive" on page 41
- "1050 Optical drive" on page 43
- "1060 PCI Express Mini Card for wireless LAN/WAN" on page 44
- "1070 SSD Card" on page 46
- "1080 Low-frame module" on page 47
- "1090 Fan assembly and Heat Sink assembly" on page 49
- "1100 DIMM" on page 50
- "1110 System board" on page 51
- "1120 LCD unit" on page 54
- "1130 Base cover, USB board, bluetooth card, power board and speakers" on page 56
- "1140 LCD front bezel" on page 60

Figure 15. LCD panel, LCD cable and hinges

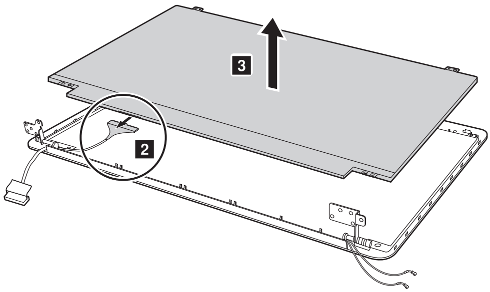
Remove screws **1**.



Step	Screw (quantity)	Color	Torque
1	M2.0 × 3 mm, flat-head, nylok-coated (4)	Black	1.8 kgfcm

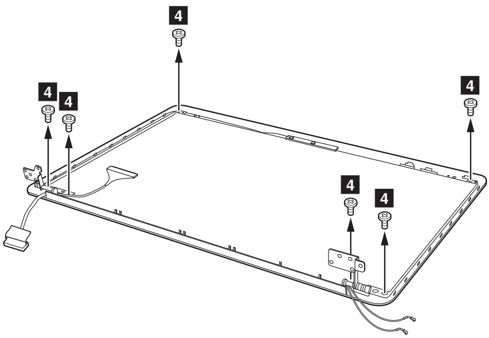
Figure 15. LCD panel, LCD cable and hinges (continued)

Disconnect the connector **2**, lift the LCD panel in the direction shown by arrow **3**.



When installing: Make sure that the connector is attached firmly.

Remove screws **4** and the hinges.



Step	Screw (quantity)	Color	Torque
3	M2.0 × 3.0 mm, flat-head, nylok-coated (2)	Black	1.8 kgfcm

1160 Integrated camera

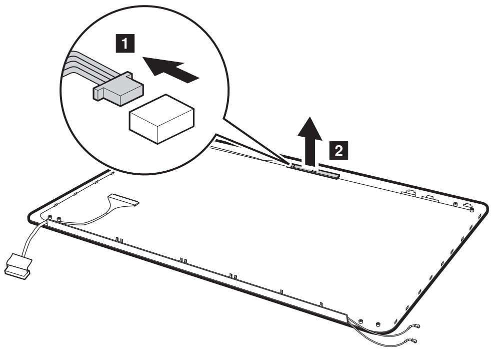
For access, remove these FRUs in order:

- "1010 Keyboard" on page 34
- "1020 Battery pack" on page 36
- "1030 Dummy card" on page 40
- "1040 Hard disk drive" on page 41
- "1050 Optical drive" on page 43
- "1060 PCI Express Mini Card for wireless LAN/WAN" on page 44
- "1070 SSD Card" on page 46
- "1080 Low-frame module" on page 47
- "1090 Fan assembly and Heat Sink assembly" on page 49
- "1100 DIMM" on page 50
- "1110 System board" on page 51
- "1120 LCD unit" on page 54
- "1130 Base cover, USB board, bluetooth card, power board and speakers" on page 56
- "1140 LCD front bezel" on page 60
- "1150 LCD panel, LCD cable and hinges" on page 61

Figure 16. Removal steps of integrated camera

Note: The integrated camera is stuck on the top center of the LCD cover.

Detach the connector in the direction **1**, Remove the integrated camera from the LCD cover in the direction **2**.

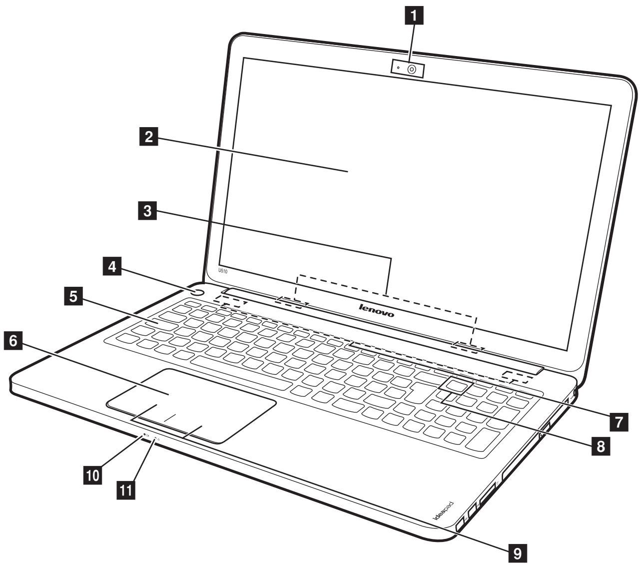


When installing: Stick the integrated camera to the top center of the LCD cover and ajust the placement of it to make sure the connector is attached firmly.

Locations

Front view

1 Integrated camera
2 Computer display
3 Wireless LAN antennas
4 Power button
5 Caps lock indicator
6 Touchpad
7 Speakers
8 Number lock indicator
9 Touchpad buttons
10 Battery status indicator
11 Power indicator



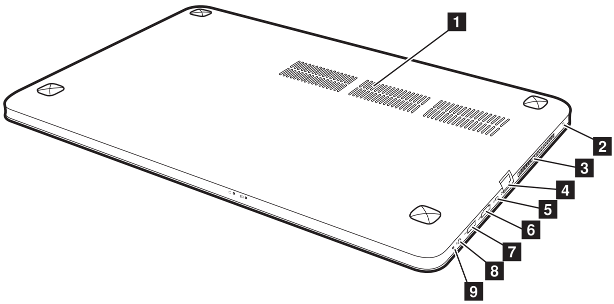
Right-side view

1 USB 2.0 port
2 Memory card slot
3 Optical drive (on select models)
4 AC power adapter jack



Bottom and Left-side view

1 Louvers
2 Novo button
3 Ventilation slots
4 RJ-45 port
5 MINI VGA
6 HDMI port
7 USB 3.0 port
8 Combo audio jack
9 Built-in microphone



Parts list

This section presents the following service parts:

- "Overall" on page 68
- "LCD FRUs" on page 73
- "Keyboard" on page 75
- "Miscellaneous parts" on page 79
- "AC adapters" on page 80
- "Power cords" on page 81

Notes:

- Each FRU is available for all types or models, unless specific types or models are specified.

Overall

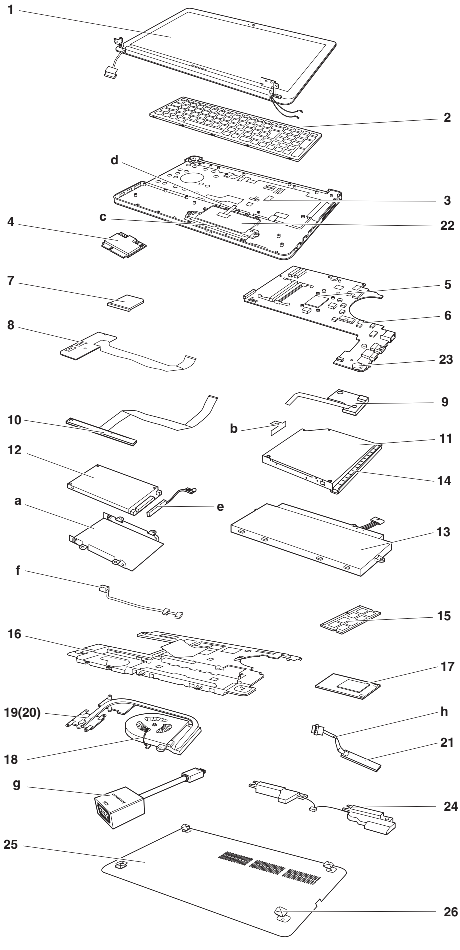

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Table 4. Parts list—Overall

No.	FRU	FRU no.	CRU ID
1	LCD unit (see "LCD FRUs" on page 73.)		
2	Keyboard (see "Keyboard" on page 75.)		
3	VITU5 Upper Case	90201873	N
4	WLAN, WiFi 1x2 BGN + WiMAX Intel 6150NX MOW M PCIE NB HMC (LI)	20002484	*
4	WLAN, WiFi 1x2 BGN + WiMAX Intel 6150NX BSB M PCIE NB HMC (LI)	20002543	**
4	WLAN, WiFi 2x2 BGN Intel 2200N MOW M PCIE NB HMC	20200048	**
4	WLAN, WIDI+BT Intel 2230 BGN+BT M PCIE HMC	20200078	**
4	WLAN, WiFi 1x1 BGN Cbt BCM4313 MOW M PCIE NB HMC	20002505	**
4	WLAN, WiFi 1x1 BGN Liteon HB125 1x1BGN HMC wlan	20200223	**
4	WLAN, WiFi 1x1 BGN Liteon AR9285 HB95 BGN MOW NB IN	20002357	**
4	WLAN, WiFi 1x1 BGN+BT4.0 Cbt BCM4313HMGB BGN+BT HMC	20002501	**
4	WLAN, WiFi 1x1 BGN+BT4.0 Liteon WB225 BGN+BT HMC	20200197	**
5	Processor, Ivy bridge core Dual Core ULV Intel I3-3217U 1.8G L1 3M 2cBGA processor	102500313	N
5	Processor, Ivy bridge core Dual Core ULV Intel I5-3317U 1.7G L1 3M 2cBGA processor	102500314	N
5	Processor, Ivy bridge core Dual Core ULV Intel I5-3427U 1.8G L1 3M 2cBGA processor	102500315	N
5	Processor, Ivy bridge core Dual Core ULV Intel I7-3517U 1.9G L1 4M 2cBGA processor	102500330	N
5	Processor, Sandy bridge core Dual Core 17W Intel I3-2365M 1.4G J1 3M 2cBGA CPU	102500409	N
5	Processor, Sandy bridge core Dual Core 17W Intel I3-2377M 1.5G J1 3M 2cBGA CPU	102500410	N
6	VITU5 MB UMA I3-2377	90001010	N
6	VITU5 MB DIS I3-2377 W/BL	90001011	**
6	VITU5 MB DIS I5-3317	90001012	N
6	VITU5 MB DIS I3-3217	90001013	N
6	VITU5 W8P MB UMA I3-2377	90001014	*
6	VITU5 W8P MB DIS I3-2377 W/BL	90001015	*
6	VITU5 W8P MB DIS I5-3317	90001016	*
6	VITU5 W8P MB DIS I3-3217	90001017	*
6	VITU5 W8 MB UMA I3-2377	90001018	*
6	VITU5 W8 MB DIS I3-2377 W/BL	90001019	N
6	VITU5 W8 MB DIS I5-3317	90001020	N
6	VITU5 W8 MB DIS I3-3217	90001021	N
7	VITU5 SD Dummy Card	90201895	*
8	VITU5 USB Board W/Cable	90001023	*
9	VITU5 Power Board W/Cable	90001024	*

Table 4. Parts list—Overall (continued)

No.	FRU	FRU no.	CRU ID
10	VITU5 LED Board W/Cable	90001025	*
11	ODD, 9.5mm Tray in Rambo HLDS GU70N Slim Tray DVD Rambo ODD	25205807	**
11	ODD, 9.5mm HLDS GU60N Slim Tray DVD Rambo ODD	25204158	**
11	ODD, 9.5mm PSN UJ8B2 Slim Tray DVD Rambo ODD	25204157	**
11	ODD, 9.5mm Optiarc AD-7940H Slim Tray DVD Rambo ODD	25204156	**
11	ODD, 9.5mm PLDS DU-8A5SH Slim Tray DVD Rambo ODD	25205806	*
11	ODD, 9.5mm PLDS DU-8A4SH Slim Tray DVD Rambo ODD	25204155	*
12	HDD,500G 5400rpm ST500LM012 5.4K 9.5 500G HDD	16200210	**
12	HDD,500G 5400rpm WD5000LPVT-08G33T1 7mm 5.4K rpm 500G HDD	16200264	N
12	HDD,500G 5400rpm WD WD5000BPVT-24A1YT0 5400PRM 9.5mm 500 HDD	16200089	**
12	HDD,500G 5400rpm ST500LT012 5.4K 7mm 500G HDD	16200211	**
12	HDD,500G 5400rpm HTS545050A7E380 RV 7mm 5.4K 500G HDD	16200297	**
12	HDD,500G 5400rpm HGST HTS545050A7E380 5400PRM7mm 500G HDD	16200067	**
12	HDD,500G 5400rpm Toshiba MK5065GSX 5400RPM 500G HDD	16004643	**
12	HDD,500G 5400rpm Seagate ST9500325AS 500G 9NB HDD	16004189	**
12	HDD,500G 5400rpm MQ01ABF050 7mm 5.4K rpm 500G HDD	16200273	**
12	HDD,750G 5400rpm ST750LM022 5.4K 9.5 750G HDD	16200209	**
12	HDD,750G 5400rpm WD7500BPVT-24HXZT1/ WD7500BPVT-24HXZ	16004848	*
12	HDD,750G 5400rpm HTS541075A9E680 9.5 5.4K 750G HDD	16200192	*
12	HDD,750G 5400rpmTSB MQ01ABD075 9.5mm 5.4K 750G HDD	16200220	*
12	HDD,750G 5400rpm WD WD7500BPVT-24A1YT0 5400PRM 9.5mm 750 HDD	16200088	*
12	HDD,750G 5400rpm Toshiba MK7575GSX 5400RPM 750G HDD	16005334	*
12	HDD,750G 5400rpm HT HTS547575A9E384 5400RPM 750G HDD	16200008	**
12	HDD,1TB 5400rpm ST1000LM024 5.4K 9.5 1T HDD	16200208	N
12	HDD,1TB 5400rpm WD WD10JPVT-24A1YT0 5400PRM 9.5mm 1T HDD	16200071	N
12	HDD,1TB 5400rpm HTS541010A9E680 9.5 5.4K 1T HDD	16200193	N
12	HDD,1TB 5400rpm TSB MQ01ABD100 9.5mm 5.4K 1T HDD	16200219	N

Table 4. Parts list—Overall (continued)

No.	FRU	FRU no.	CRU ID
12	HDD,500G 7200rpm HTS725050A7E630 RV 7mm 7.2K 500G HDD	16200306	**
12	HDD,500G 7200rpm WD WD5000BPKT 7200RPM 500G HDD	16200004	**
12	HDD,500G 7200rpm TSB MK5061GSY 7200PRM 9.5mm 500G HDD	16200086	**
12	HDD,500G 7200rpm HTS725050A7E630 7 7.2K 500G HDD	16200195	*
13	Battery, 45Wh polymer battery, U510 SMP/ATL L11M3P02 11.1V45Wh 3cellbty	121500082	*
13	Battery, 45Wh polymer battery, U510 LG L11L6P01 11.1V45Wh 6cellbty	121500083	*
14	VITU5 ODD Bezel	90201893	*
15	DDR3 1600 2GB SS M471B5773EB0-CK0 DDR3 1600 2GB	11201035	N
15	DDR3 1600 2GB M471B5773DH0-CK0 DDR3 1600 2GB	11200340	N
15	DDR3 1600 2GB HMT325S6CFR8C-PB DDR3 1600 2GB	11200343	N
15	DDR3 1600 2GB MT8KTF25664HZ-1G6M1 DDR3 1600 2GB	11200346	N
15	DDR3 1600 2GB Ram RMT3150MM58E8F-1600 DDR3 1600 2GB	11201037	N
15	DDR3 1600 2GB RMT3150ED58E8W-1600 DDR3 1600 2GB	11200392	N
15	DDR3 1600 2GB SP321NH08IAF DDR3 1600 2GB	11200394	N
15	DDR3 1600 2GB Nan NT2GC64B88G0NS-DI DDR3 1600 2GB	11201041	N
15	DDR3 1600 4GB SS M471B5273EB0-CK0 DDR3 1600 4GB	11201036	N
15	DDR3 1600 4GB M471B5273DH0-CK0 DDR3 1600 4GB	11200341	N
15	DDR3 1600 4GB MT16KTF51264HZ-1G6M1 DDR3 1600 4GB	11200347	N
15	DDR3 1600 4GB HMT351S6CFR8C-PB DDR3 1600 4GB	11200344	N
15	DDR3 1600 4GB Ram RMT3160MM58E9F-1600 DDR3 1600 4GB	11201038	N
15	DDR3 1600 4GB RMT3160ED58E9W-1600 DDR3 1600 4GB	11200393	N
15	DDR3 1600 4GB SP322NQ08IAF DDR3 1600 4GB	11200395	N
15	DDR3 1600 4GB Sha SP322NQ08IBF DDR3 1600 4GB	11201040	N
15	DDR3 1600 4GB SM322NQ08IAF DDR3 1600 4GB	11200397	N
15	DDR3 1600 4GB Nan NT4GC64B8HG0NS-DI DDR3 1600 4GB	11201042	N
15	DDR3 1600 8GB M471B1G73BH0-CK0 DDR3 1600 8GB	11200342	N
15	DDR3 1600 8GB HMT41GS6MFR8C-PB DDR3 1600 8GB	11200345	N
15	DDR3 1600 8GB MT16KTF1G64HZ-1G6D1 DDR3 1600 8GB	11200507	N
16	VITU5 Lower Case Bracket	90201892	**
17	SSD,24G SSD Samsung MZMPA024HMCD 24G mSATA SSD	16200256	*

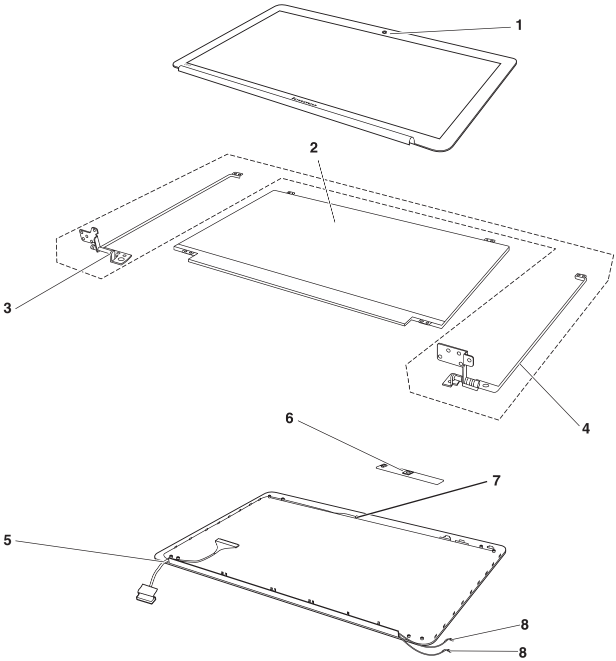
Table 4. Parts list—Overall (continued)

No.	FRU	FRU no.	CRU ID
17	SSD,24G SSD Sandisk U100 SDSA5DK 24G mSATA SSD	16200252	**
17	SSD,24G SSD Ramaxel RDM-II XM020C 24G mSATA SSD	16200253	**
17	SSD,32G SSD Samsung PM830 32G mSATA SSD	16200108	**
17	SSD,32G SSD Sandisk X100 32G mSATA SSD	16200162	**
17	SSD,32G SSD Micron C400v 32G mSATA SSD	16200163	**
18	VITU5 Fan	90201877	*
19	VITU5 HeatSink DIS	90201875	*
20	VITU5 HeatSink UMA	90201876	**
21	BT, BT4.0 Cbt BCM920702 BT4.0 EDR Flash U NB	20200056	**
21	BT, BT4.0 Ltn BCM920702 BT4.0 EDR Flash U NB	20200057	**
22	VITU5 TP Board	90001026	**
23	VITU5 Battery On MB	90201888	**
24	VITU5 Speaker L+R	90201891	**
25	VITU5 Lower Case	90201874	*
26	VITU5 Rubber Foot	90201889	*

LCD FRUs

In Lenovo IdeaPad U510, there are following types of LCDs.

- “15.6 -in. HD TFT”



15.6-in. HD TFT

Table 5. Parts list—15.6-in. HD TFT

No.	FRU	FRU no.	CRU ID
1	VITU5 LCD Bezel	90201886	N
2	Panel 15.6 Glare, AUO B156XTN03.2 HD G W LED1 NB LCD	18200449	N
2	Panel 15.6 Glare, CMI N156BGE-LB1 HD G W LED1 NB LCD	18200450	N
3	VITU5 LCD Hinge L	90201884	N
4	VITU5 LCD Hinge R	90201885	N
5	VITU5 LCD Cable W/Camera Cable	90201878	N
6	VITU5 Camera Board 1.0M	90001022	N
6	VITU5 Camera Board 0.3M	90001454	N
7	VITU5 LCD Cover	90201883	N
8	VITU5 Antenna*2	90201887	N

Keyboard

Table 6. Parts list—Keyboard

Language			P/N	CRU ID
keyboard	OKI (black)	Indian	25205608	**
		Czechoslovakian	25205606	
		Bulgarian	25205607	
		International English	25205605	
		Swiss	25205604	
		Slovenian	25205603	
		Icelandic	25205602	
		Belgian	25205601	
		Four Nordic countries	25205600	
		Hungarian	25205599	
		Hebrew	25205598	
		Greek	25205597	
		Dutch	25205596	
		Japanese	25205595	
		Brazilian	25205594	
		Arabic	25205593	
		German	25205592	
		French	25205591	
		Russian	25205590	
		Traditional Chinese	25205589	
		Korean	25205588	
		Canadian English&French	25205587	
		Latin	25205586	
		Portuguese	25205585	
		Thai	25205584	
		Turkish	25205583	
		Spanish	25205582	
		Italian	25205581	
		U.K. English	25205580	
		English	25205579	
	OKI (backlight)	Indian	25205698	
		Czechoslovakian	25205696	
		Bulgarian	25205697	
		International English	25205695	
		Swiss	25205694	
		Slovenian	25205693	
		Icelandic	25205692	
		Belgian	25205691	
		Four Nordic countries	25205690	
		Hungarian	25205689	
		Hebrew	25205688	
		Greek	25205687	
		Dutch	25205686	
		Japanese	25205685	
		Brazilian	25205684	

Table 6. Parts list—Keyboard (continued)

Language			P/N	CRU ID
keyboard (continued)	OKI (backlight) (continued)	Arabic	25205683	**
		German	25205682	
		French	25205681	
		Russian	25205680	
		Traditional Chinese	25205679	
		Korean	25205678	
		Canadian English&French	25205677	
		Latin	25205676	
		Portuguese	25205675	
		Thai	25205674	
		Turkish	25205673	
		Spanish	25205672	
		Italian	25205671	
		U.K. English	25205670	
		English	25205669	
	Darfon (black)	Indian	25205548	
		Czechoslovakian	25205546	
		Bulgarian	25205547	
		International English	25205545	
		Swiss	25205544	
		Slovenian	25205543	
		Icelandic	25205542	
		Belgian	25205541	
		Four Nordic countries	25205540	
		Hungarian	25205539	
		Hebrew	25205538	
		Greek	25205537	
		Dutch	25205536	
		Japanese	25205535	
		Brazilian	25205534	
		Arabic	25205533	
		German	25205532	
		French	25205531	
		Russian	25205530	
		Traditional Chinese	25205529	
		Korean	25205528	
		Canadian English&French	25205527	
		Latin	25205526	
		Portuguese	25205525	
		Thai	25205524	
		Turkish	25205523	
		Spanish	25205522	
		Italian	25205521	
		U.K. English	25205520	
		English	25205519	

Table 6. Parts list—Keyboard (continued)

Language			P/N	CRU ID
keyboard (continued)	Darfon (backlight)	Indian	25205638	**
		Czechoslovakian	25205636	
		Bulgarian	25205637	
		International English	25205635	
		Swiss	25205634	
		Slovenian	25205633	
		Icelandic	25205632	
		Belgian	25205631	
		Four Nordic countries	25205630	
		Hungarian	25205629	
		Hebrew	25205628	
		Greek	25205627	
		Dutch	25205626	
		Japanese	25205625	
		Brazilian	25205624	
		Arabic	25205623	
		German	25205622	
		French	25205621	
		Russian	25205620	
		Traditional Chinese	25205619	
		Korean	25205618	
		Canadian English&French	25205617	
		Latin	25205616	
		Portuguese	25205615	
		Thai	25205614	
		Turkish	25205613	
		Spanish	25205612	
		Italian	25205611	
		U.K. English	25205610	
		English	25205609	
	Sunrex (black)	Indian	25205578	
		Czechoslovakian	25205576	
		Bulgarian	25205577	
		International English	25205575	
		Swiss	25205574	
		Slovenian	25205573	
		Icelandic	25205572	
		Belgian	25205571	
		Four Nordic countries	25205570	
		Hungarian	25205569	
		Hebrew	25205568	
		Greek	25205567	
		Dutch	25205566	
		Japanese	25205565	
		Brazilian	25205564	

Table 6. Parts list—Keyboard (continued)

Language			P/N	CRU ID
keyboard (continued)	Sunrex (black) (continued)	Arabic	25205563	**
		German	25205562	
		French	25205561	
		Russian	25205560	
		Traditional Chinese	25205559	
		Korean	25205558	
		Canadian English&French	25205557	
		Latin	25205556	
		Portuguese	25205555	
		Thai	25205554	
		Turkish	25205553	
		Spanish	25205552	
		Italian	25205551	
		U.K. English	25205550	
		English	25205549	
	Sunrex (backlight)	Indian	25205668	
		Czechoslovakian	25205666	
		Bulgarian	25205667	
		International English	25205665	
		Swiss	25205664	
		Slovenian	25205663	
		Icelandic	25205662	
		Belgian	25205661	
		Four Nordic countries	25205660	
		Hungarian	25205659	
		Hebrew	25205658	
		Greek	25205657	
		Dutch	25205656	
		Japanese	25205655	
		Brazilian	25205654	
		Arabic	25205653	
		German	25205652	
		French	25205651	
		Russian	25205650	
		Traditional Chinese	25205649	
		Korean	25205648	
		Canadian English&French	25205647	
		Latin	25205646	
		Portuguese	25205645	
		Thai	25205644	
		Turkish	25205643	
		Spanish	25205642	
		Italian	25205641	
		U.K. English	25205640	
		English	25205639	

Miscellaneous parts

Table 7. Parts list—Miscellaneous parts

FRU	P/N	CRU ID
System miscellaneous parts: • (a) VITU5 HDD Bracket • (b) VITU5 ODD Bracket • (c) VITU5 TP Bracket	 90201896 90201894 90201890	N
Cable miscellaneous parts: • (d) VITU5 TP Cable • (e) VITU5 HDD Cable • (f) VITU5 DC-IN Cable • (g) VITU5 MINI-VGA CABLE • (h) VITU5 BT Cable **Note:** Italicized letters in parentheses are references to the exploded view in “Overall” on page 71.	 90201879 90201881 90201882 90202049 90201880	N

AC adapters

Table 8. Parts list—3-pin AC adapters

FRU	P/N	CRU ID
65W, Delta ADP-65KH BD 20V/3.25A adapter	36001929	N
65W, Liteon PA-1650-56LC adapter	36001651	N
65W, Brazil PA-1650-52LB adapter	36001714	N
65W, Delta ADP-65KH B 20V,3.25A adapter	36002066	N
65W, Chicony CPA-A065 20V3.25A adapter (330PF)	36001943	N

Power cords

A Lenovo power cord for a specific country or region is usually available only in that country or region:

Table 9. Parts list—3-pin power cords

Region	P/N	CRU ID
CCC • LINETEK PC323+RVV300/300+LS15 1m	145000600	*
Argentina • LINETEK LS15+H03VV-F+LP39 1m	145000599	
Danmark • LINETEK LS15+H03VV-F+LP-38 1m	145000598	
Switzerland • LINETEK LS15+H03VV-F+LP-37 1m	145000597	
Brazil • LINETEK LS15 H03VV-F LP26A 1m	145000596	
Israel • LINETEK LS15+H03VV-F+LP-41 1m	145000595	
UL • LINETEK LP-30B + SPT-2 + LS15 1m	145000594	
UK • LINETEK LP-61L+ H03VV-F+ LS15 1m	145000593	
Indian • LINETEK PE-361+ H05VV-F+ LS15 1m	145000592	
Italy • LINETEK LS15+H03VV-F+PE-336 1m	145000591	
Korea • LINETEK LS15+H05VV-F+LP-E04A 1m	145000590	
Australia • LINETEK LS15+H03VV-F+LP-23A 1m	145000589	
Taiwan • LINETEK LS15+VCTF+LP-53 1m	145000588	
Japan • LINETEK LS15+VCTF+LP-54 1m	145000587	
Africa • LINETEK LS15+H03VV-F+PE-364 1m	145000586	
CE • LINETEK LP-34+H03VV-F + LS15 1m	145000585	
CCC • Longwell LSG-31+RVV300/300+LS-18 1m	145000568	
Argentina • Longwell LP-24+H03VV-F+LS-18 1m	145000567	
Danmark • Longwell LP-40+H03VV-F+LS-18 1m	145000566	
Switzerland • Longwell LP-37+H03VV-F+LS-18 1m	145000565	

Table 9. Parts list—3-pin power cords (continued)

Region	P/N	CRU ID
Brazil • Longwell LP-46+H03VV-F+LS-18 1m	145000564	*
Israel • Longwell LP-41+H03VV-F+LS-18 1m	145000563	
UL • Longwell LP-30B+SPT-2 18AWG+LS-18 1m	145000562	
UK • Longwell LP-61L+H03VV-F+LS-18 1m	145000561	
Indian • Longwell LP-67+BIS+LS-18 1m	145000560	
Italy • Longwell LP-22+H03VV-F+LS-18 1m	145000559	
Korea • Longwell LP-486+KTLH03VV-F+LS-5 1m	145000558	
Australia • Longwell LP-23A+LFC-3R+LS-18 1m	145000557	
Taiwan • Longwell LP-71+VCTF+LS-33 1m	145000556	
Japan • Longwell LP-54+VCTF+LS-18 1m	145000555	
Africa • Longwell LP-39+H03VV-F+LS-18 1m	145000554	
CE • Longwell LP-34A+H03VV-F+LS-18 1m	145000553	
CCC • VOLEX GB10S3+RVV 300/500+VAC5S 1m	145000538	
UL • Volex US15S3+SPT-2 +VAC5S 1m	145000537	
Indian • VOLEX IA6A3+IS694+VAC5S 1m	145000536	
Italy • VOLEX IT10S3+HO3VV-F+VAC5S 1m	145000535	
Danmark • VOLEX MP233D+H03VV-F+VAC5S 1m	145000534	
Korea • VOLEX M2511+KETI IEC+VAC5S 1m	145000533	
Australia • VOLEX AU10S3+H03VV-F+VAC5S 1m	145000532	
Taiwan • VOLEX TW15CS3+VCTF+VAC5S 1m	145000531	
Japan • VOLEX VAC5S+VCTF+M755 1m	145000530	
Argentina • VOLEX VA2073+H03VV-F+VAC5S 1m	145000528	

Table 9. Parts list—3-pin power cords (continued)

Region	P/N	CRU ID
Brazil • VOLEX CH10S3+H03VV-F+VAC5S 1m	145000527	* *
Israel • VOLEX SI16S3+H03VV-F+VAC5S 1m	145000526	
CE • VOLEX M2511+HO3VV-F+VAC5S 1m	145000525	
Switzerland • VOLEX MP232+H03VV-F+VAC5S 1m	145000524	
UK • VOLEX MP5004+H03VV-F+VAC5S 1m	145000605	

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